

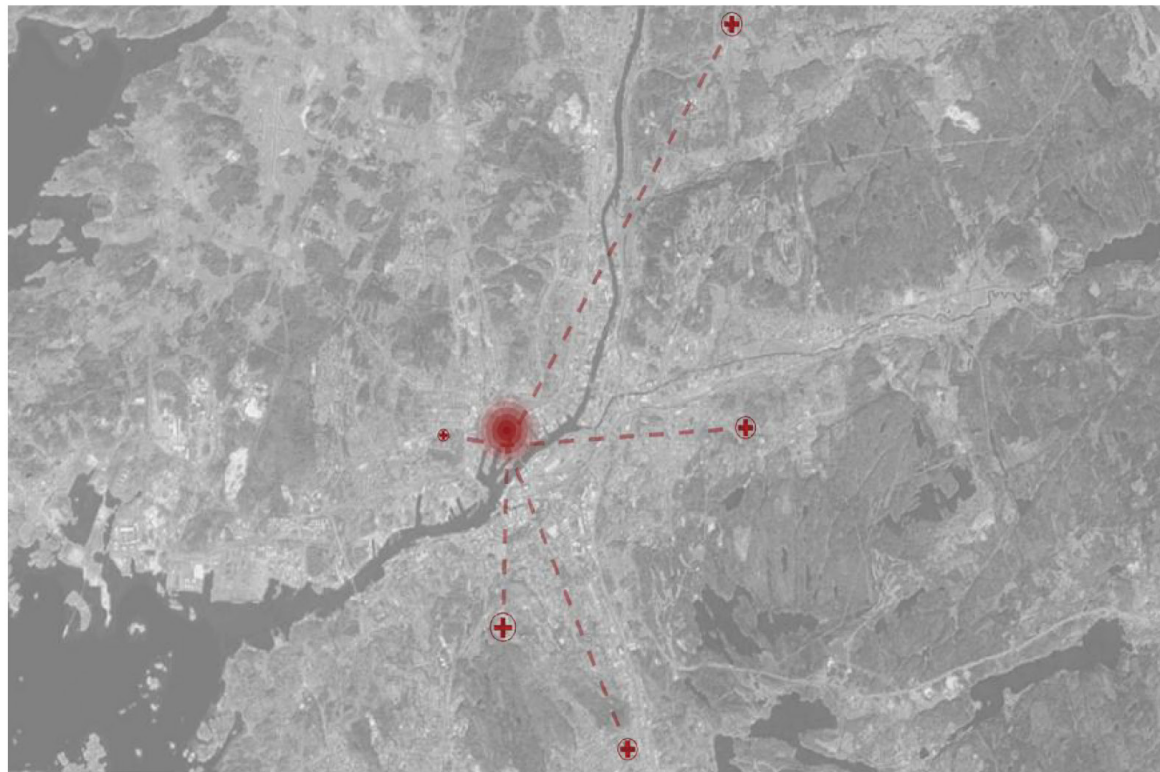
# A NEW WAY TO HEALTH CARE

## FRIHAMNEN NEARBY HOSPITAL



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Context



Assignment

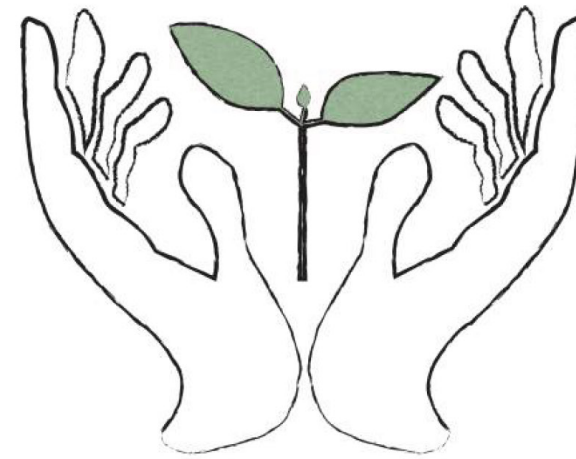
In the upcoming 20 years the city center of Göteborg will be expanded to Frihamnen, where a new neighbourhood will be developed. A new hospital for outpatient care will be built in the neighbourhood of Frihamnen. The new nearby hospital will be part of a healthcare network in the area of Göteborg.

'Frihamnen närsjukhus' will host 100.000 doctor visits per year and will include different specialized outpatient departments.

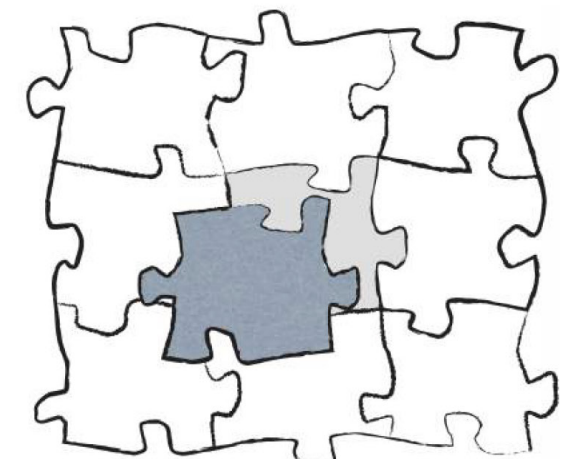
Also, the hospital holds 6 operation theatres for day surgery and 1000 m<sup>2</sup> of dialysis care.

The site of the nearby hospital is situated in Frihamnen, in between the new bridge from the city across the river and Hjalmar Brantingsplatsen. The site is located next to Frihamnsplatsen where a new tram and bus stop will be created. The new neighbourhood will house about 20.000 inhabitants. The newly created hospital will enhance the quality of the neighbourhood.

Vision



Wellbeing in focus



Relation to the site

Past and future

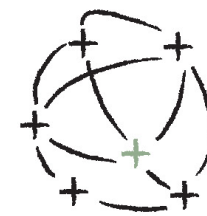
In the design process a vision has been formulated as the foundation of this project. The vision is defined as 'Wellbeing in focus' and 'Relation to the site'. This vision is based on our own interests and has been used to formulate our design topics and conceptual goals. The design topics are also a result from an analysis of how we imagine a future hospital to be.

The possible future healthcare system will be strongly influenced by data-sharing and new techniques which also expects people to participate more in their health treatments.

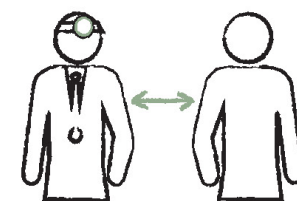
Therefore, the way people visit the hospital and the way people interact with staff will change. Future hospital visits will be more dependent on the visitors' independence, and more efficient.

Furthermore, the hospital is no longer a place you only visit when you're ill. It is also a part of the city with a strong connection to the surroundings. It hosts public functions and is a landmark for the new neighbourhood of Frihamnen.

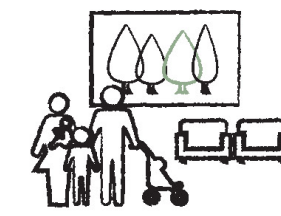
Design topics



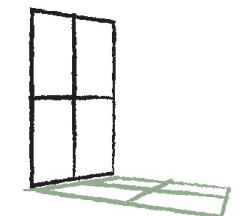
Data-sharing hospital network



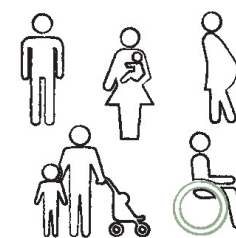
Doctor-Patient interaction



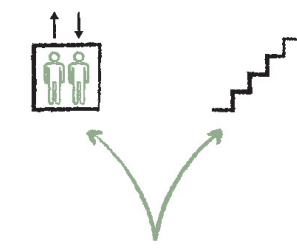
Social interaction & greenery



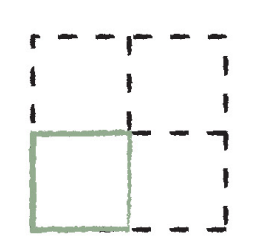
Lightning, noise & privacy



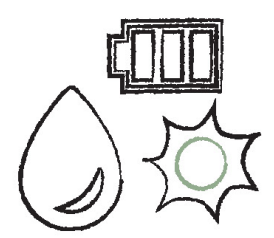
Accessibility



Clear opportunities



Flexibility



Sustainability

## Conceptual goals

The vision and design topics are summarized in three conceptual goals: movement, identity, and redefining the hospital. These goals are the main guide lines for the design.

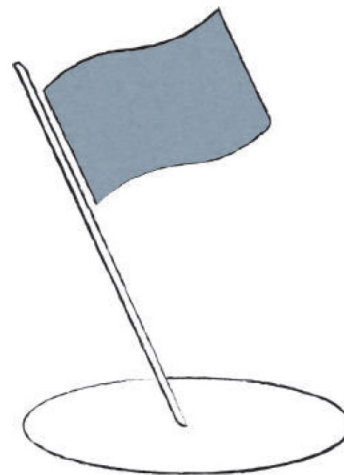
### Movement

The first goal is about the movement in and around the hospital of three different user groups: Goods, Patients, and Staff. The flow of these three are separated inside the hospital to secure the efficiency and integrity that is needed. Furthermore, the expected movement of the citizens in the new area is analysed.



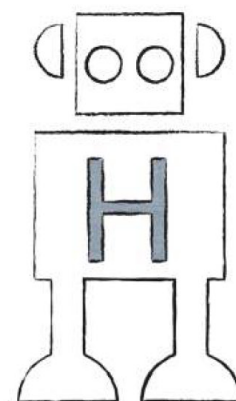
### Identity

The building will be an additional quality for the new neighbourhood. The function of the hospital is expanded. It hosts public functions and it is a landmark for the new neighbourhood of Frihamnen. Different elements have been introduced to change the current idea of what a hospital should look like.



### Redefining the hospital

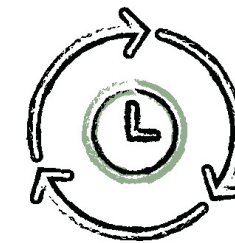
The healthcare system of the future will be different from today, which influences the needs of the hospital. Apart from adapting the program according to today's knowledge, the building should be resilient to cope with more changes in the future.



## Sustainability

The main sustainability aspect of this project is the flexibility of the building and the program. The day to day changes and the development over time have been taken into account.

The standardization of the building supports change in the daily needs of the hospital. It provides the opportunity to change the complete function of parts of the building as well.



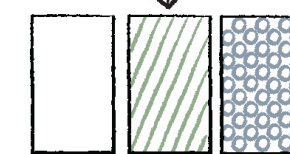
Daily change



Change of room functions



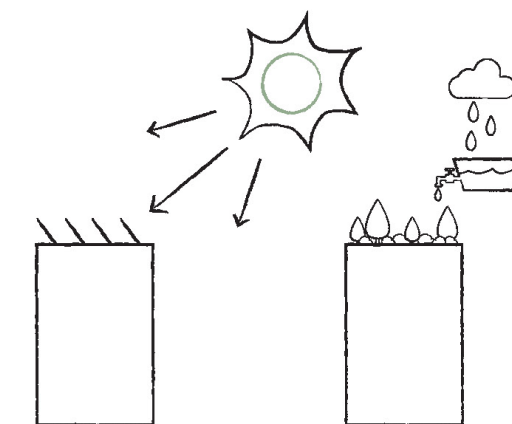
Future change



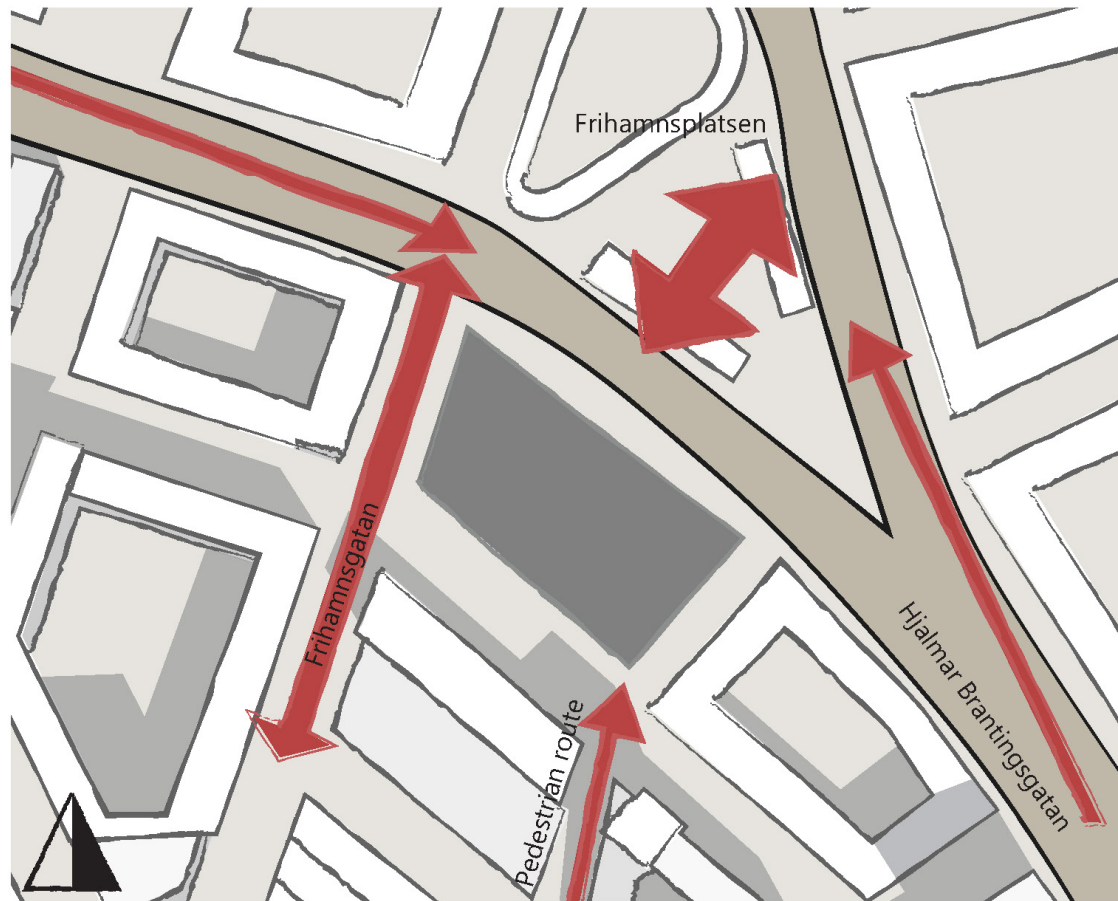
Possible separation of building functions

### Energy

A part of the building's energy use will be generated by solar panels on the roof. Furthermore, rain water will be collected to water the gardens.



### Movement outside the building



Important routes

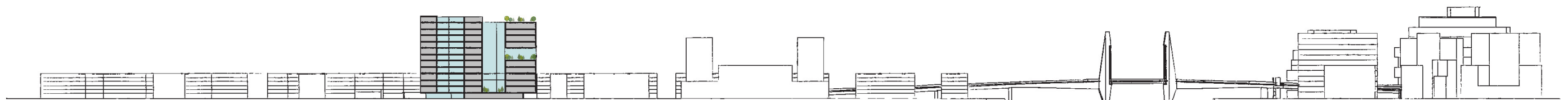
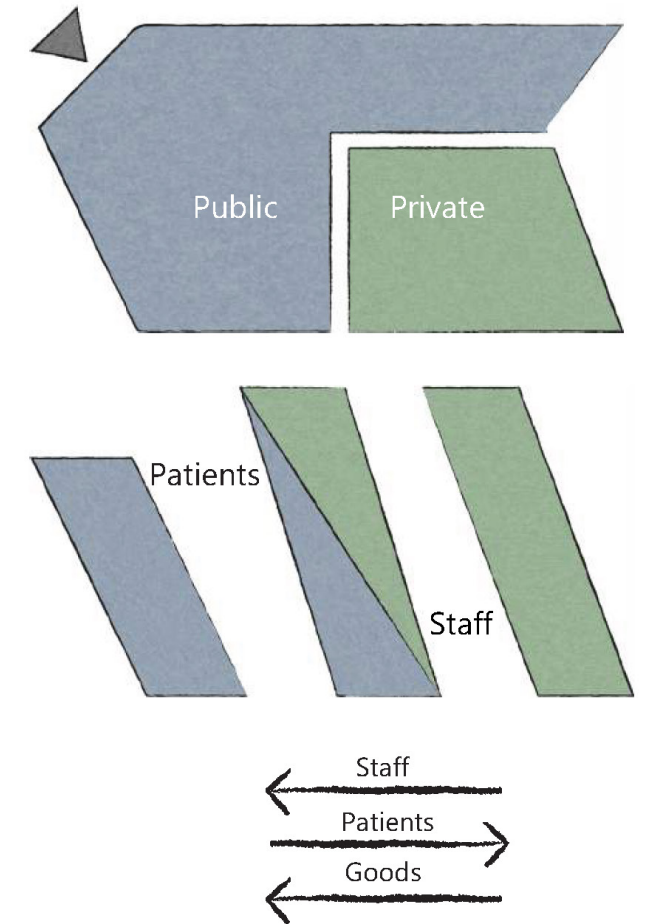
The site is located in the south of Frihamnsplatsen, which is an important public transportation spot for the hospital and the neighbourhood. Hjalmar Brantingsgatan splits up into two one-way streets in front of the site and guides cars around the square. The south of Frihamnen is mainly connected to Frihamnsplatsen by Frihamngsgatan.

#### Ground floor

The analysis of the routes around the site influences the shape of the ground floor and the placement of public and private functions inside the hospital. Frihamnsplatsen expands into an interior square within the public space of the ground floor.

#### Building on upper floors

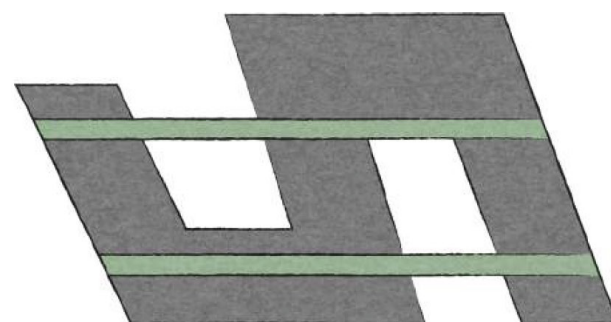
The upper floors host hospital functions of the building. To separate the flow of patients and staff, the building is divided into two parts; one containing staff functions and one patient functions. A third part connects the two, serving as a buffer zone.



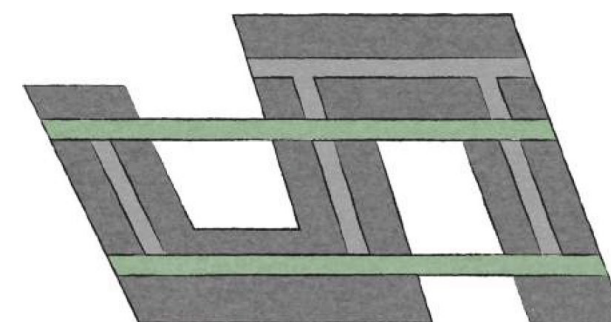
### Movement inside the building

To connect the three masses, two important horizontal routes are introduced. These routes are connected with several secondary hallways. Along the two primary hallways, all the vertical communication is placed.

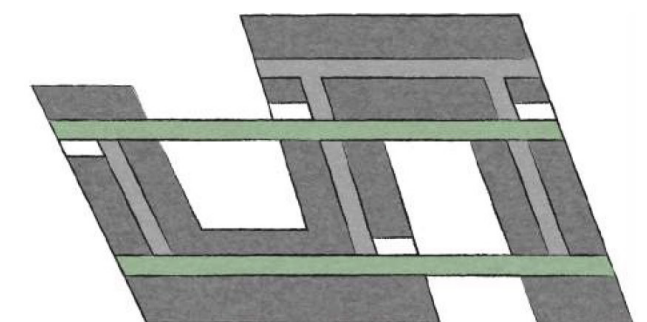
The primary connections result in two bridges creating two atria.



Primary connections



Secondary connections

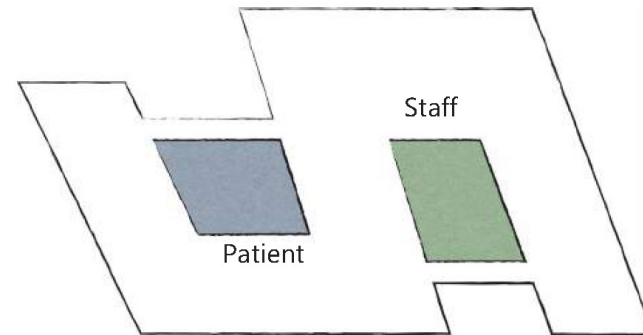


Vertical connections floors

## Identity

### Atria

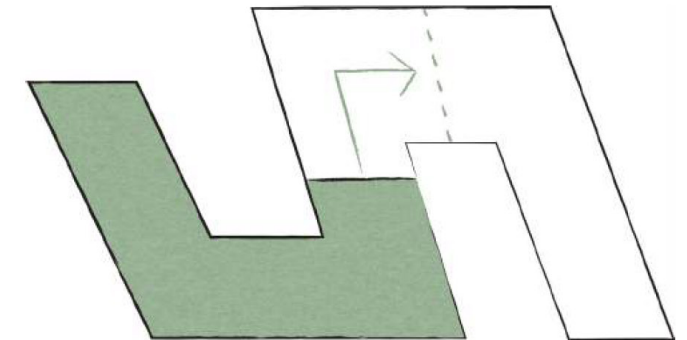
The atria, created by the bridges, are assigned to the two main user groups. The north atrium is for the patients and the south one is for the staff. The atria continues up to the top floor. The patients' atrium is covered with a glass roof, and provides a spacious interior area on the ground floor. The atrium in the staff area is exterior with a green garden.



## Future flexibility

### Horizontal flexibility

The middle mass, or buffer zone, provides the opportunity to decrease and increase the staff and patient area on each floor. Moreover, in the case that two departments share a floor, the middle mass forms a buffer for the two departments.



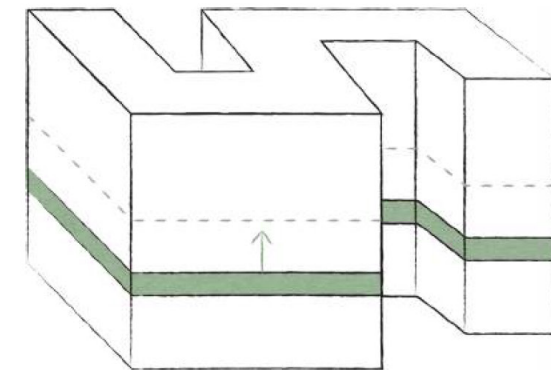
### Introducing human scale

The size of the building asks for an accessible ground floor. To connect the Frihamnsplatsen to the interior square, a glass arcade along the north facade of the ground floor is created.



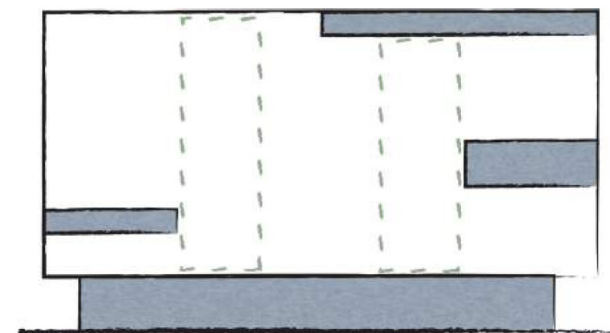
### Vertical flexibility

The building is vertically separated into two parts; The bottom part hosts more specialized functions, which need a high floor to floor distance. The top part hosts less specialised outpatient departments and has therefore a lower floor to floor distance. Within these two parts, departments can shift from one floor to another.



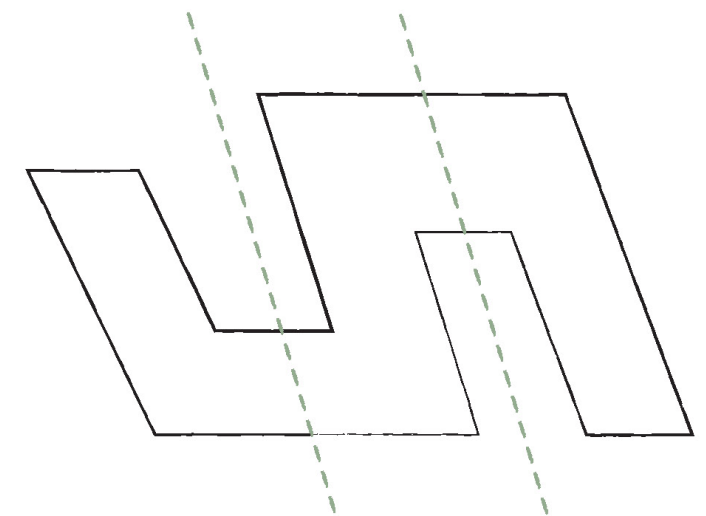
### Gaps

To bring more daylight in, create outdoor spaces, and to enhance the quality of both the interior and the exterior, several gaps are made in the building. These gaps are on the hospital floors and provide space for gardens and greenery.



### Separation of the building

The placement of technical functions, entrances and vertical communication provides the ability to separate the building into three independent units.



## Site plan

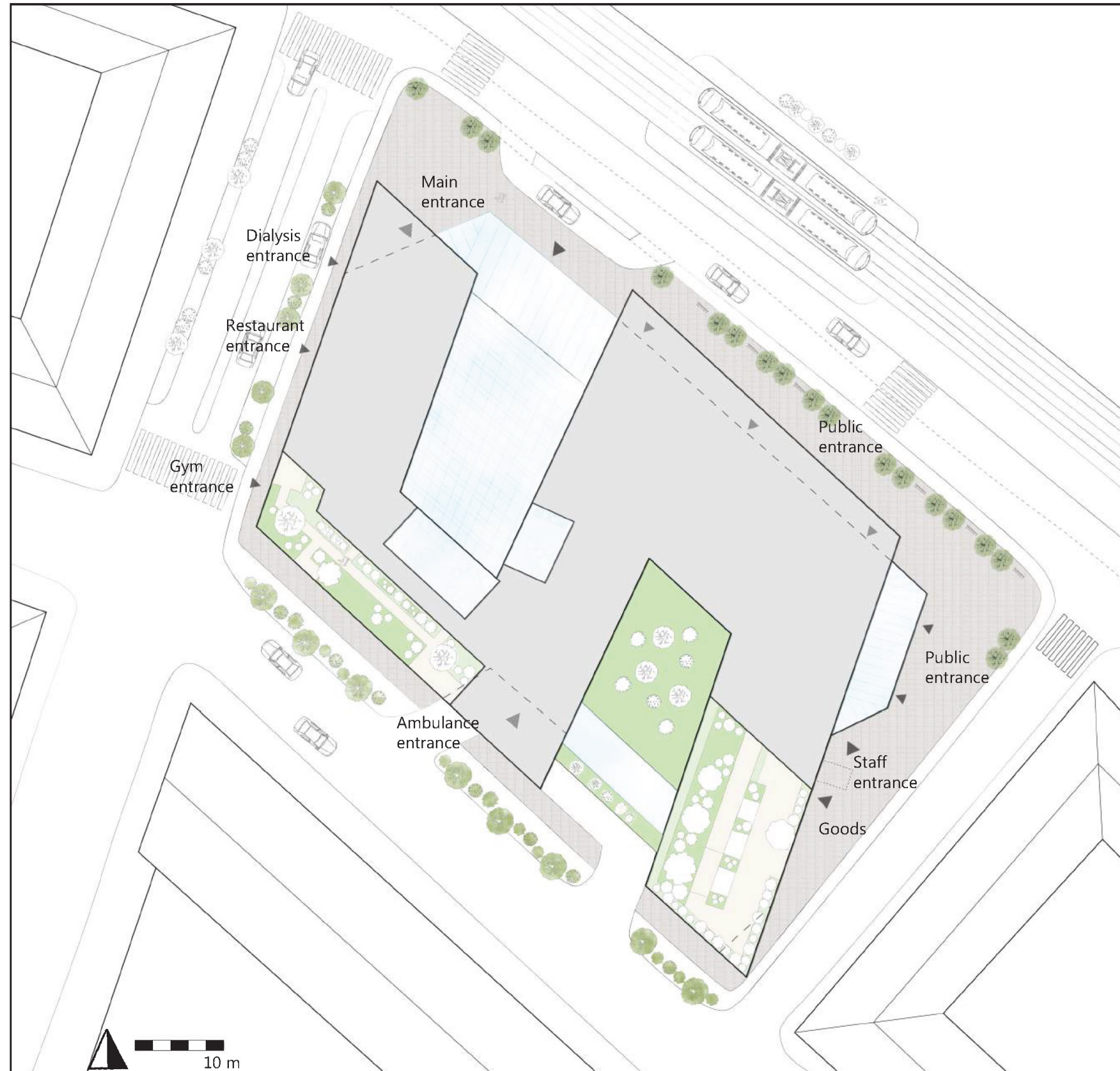
At the north side of the site, tram and bus stops are located. The stops are connected to the site with two pedestrian crossings. A taxi drop off and pick up point is located on this side as well.

The interior square has two main entrances in the north atrium of the building. Underneath the arcade of the north facade there are several other entrances, which also provide access to the public area. The west facade holds a special entrance for dialysis patients, which can provide access to the dialysis department after opening hours.

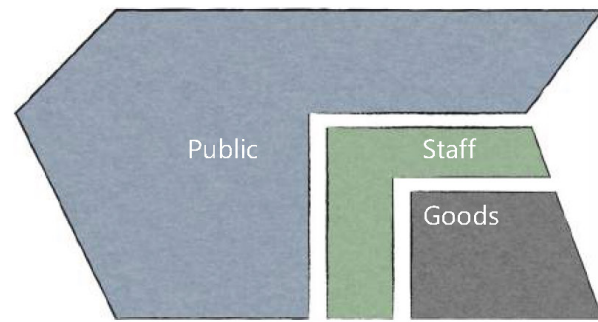
Public functions such as a restaurant, cafe, stores and a gym have both an entrance located at the inside of the building, and an entrance at Frihamngatan. However, the internal entrance to the gym is only accessible for staff members.

The south facade holds the ambulance pick up spot. The ambulance parks underneath the building, above street level, hidden from the public view by a fence covered in greenery.

At the east facade, an entrance for staff only is located. Also, the goods are delivered and distributed at this side. Four truck loading spots are located partly underneath the building.

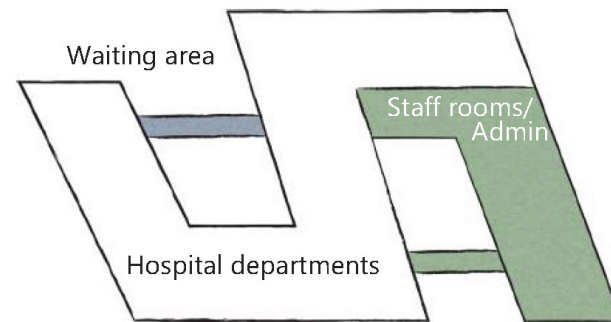


### Schematic program



Outline ground floor functions

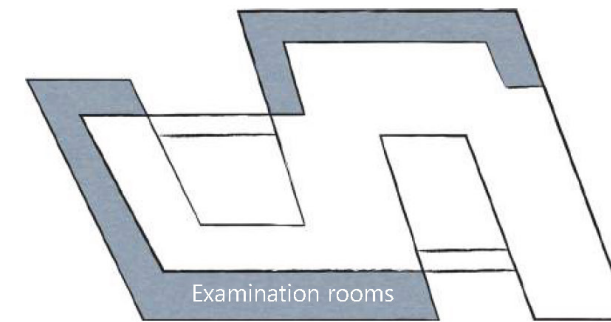
The program on the ground floor is divided into three functions. There is a public area, containing public functions, and a private area, which is divided up into staff and goods functions.



Outline hospital floors functions

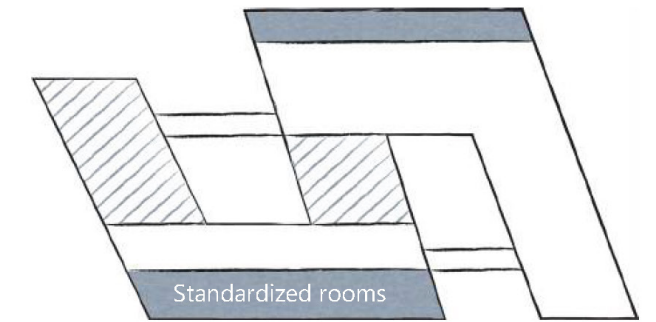
The east mass of the hospital hosts administration and staff rooms. The other two masses include the hospital departments. The southern bridge holds an informal meeting area for staff members, while the northern bridge provides a waiting area for patients.

### Floor standardization



Outline hospital floors program

The hospital departments have their examination and meeting rooms always towards the facade. The inner rooms hold supporting functions.



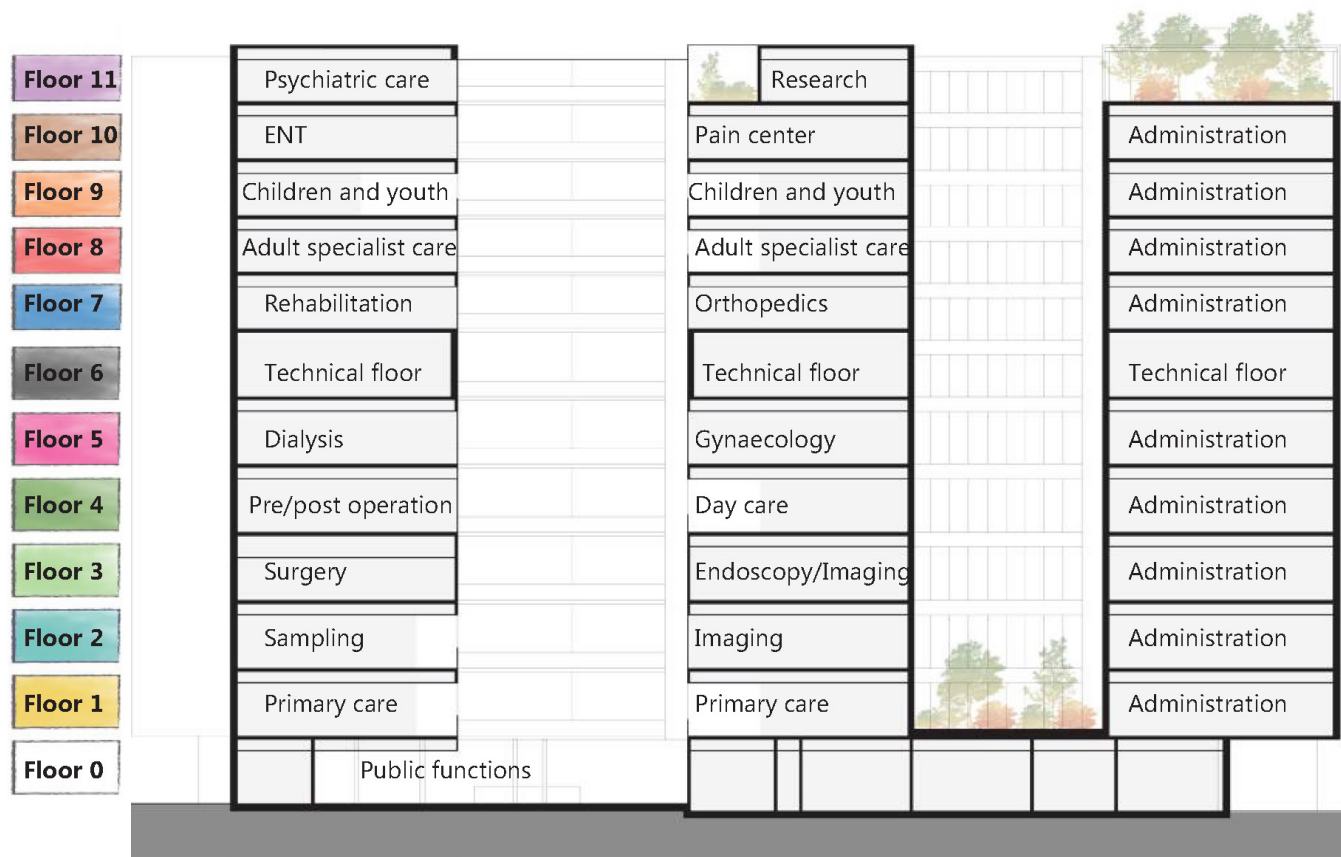
Standardized and specialized rooms

Each department has a number of standardized examination rooms and specialized rooms. The standardized rooms are the same on all floors, therefore they can be assigned to different departments. They are located at the north and south facade. The specialized rooms are arranged at two spots around the north atrium.

### Vertical schematic program

The first five hospital floors host a more specialized program. The first six floors have a floor to floor distance of 4,8 m.

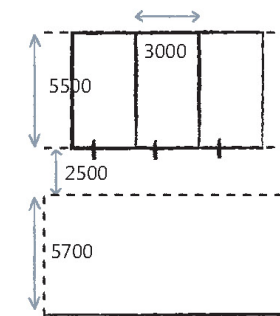
The top floors accommodate less specialized departments with a floor to floor distance of 4 m.



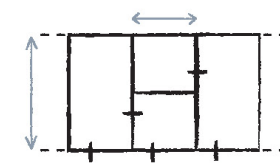
### Room standardization

#### Examination rooms

The examination rooms along the north and south facade have a floor area of 16,5m<sup>2</sup>. These are suitable for all different kinds of examination rooms and meeting rooms. The corridor is 2,5 m wide and the space at the atrium side of the corridor can be used flexibly.



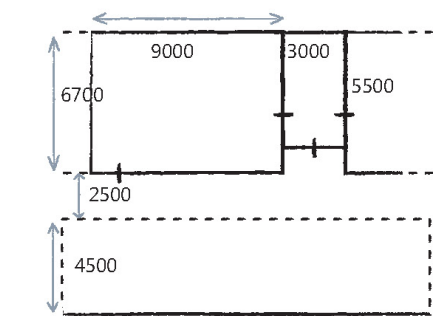
Examination rooms



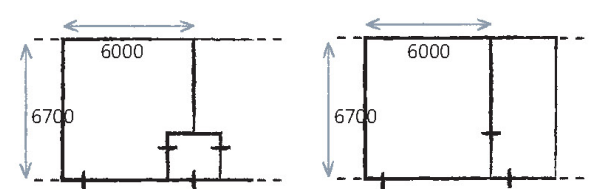
Examination rooms with accessible toilet

#### Specialized rooms

The width of the building is 15 meters, which gives the possibility to create column free floorplans. That is why the room depth of several specialized rooms can differ from the standardized room.



Operation theater



X-Ray lab

CT/ MRI

# Floorplans

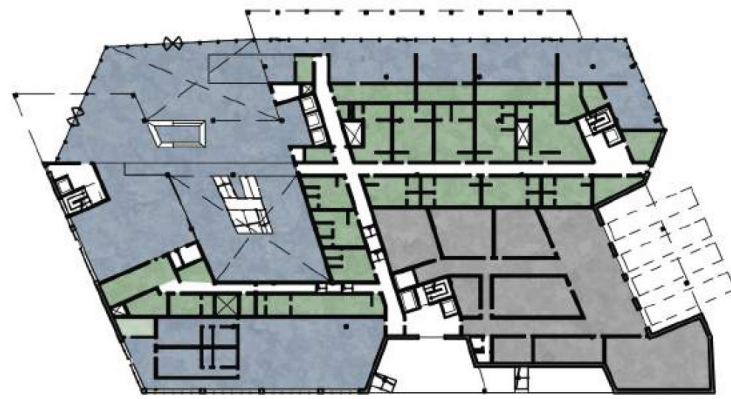
The hospital program is spread out over 11 floors. The ground floor provides space for public functions, such as a restaurant, a cafe, stores and a gym. The total area of the building is 34.405 m<sup>2</sup>. The hospital functions are 30.718 m<sup>2</sup>, and the public functions are 1.880 m<sup>2</sup>. The gardens and outdoor spaces cover 1.807 m<sup>2</sup>.

To create a specific program for this new hospital, the program of the nearby hospital of Angered was analysed by comparing the amount of square meters. This resulted in a specific number of examination rooms. Comparing the sum of examination rooms for Frihamnen to the expected amount of doctor visits each year, a conclusion was drawn. Due to the high flexibility rate of this building, the efficiency is expected to be higher. This leads to a number of 234 standardized examination rooms.

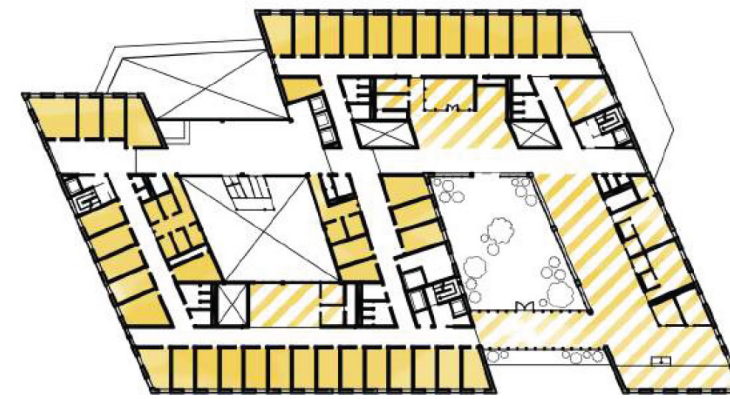
Besides the standardized rooms, each outpatient department also has several specialized examination rooms.

- Public functions
- Staff rooms
- Goods
- Primary care
- Sampling
- Imaging
- Surgery
- Gynaecology
- Endoscopy
- Day care
- Dialysis
- Rehabilitation
- Orthopedics
- Adult specialist care
- Children specialist care
- Pain center
- Ear Nose & Troath
- Psychiatry
- Research
- Administration and staff areas

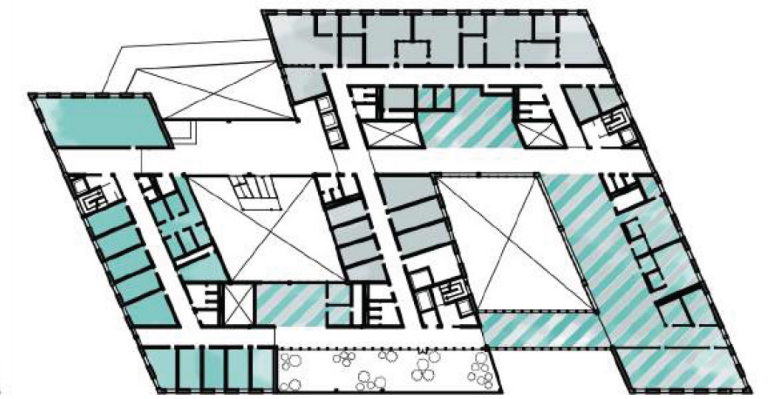
scale 1:1000



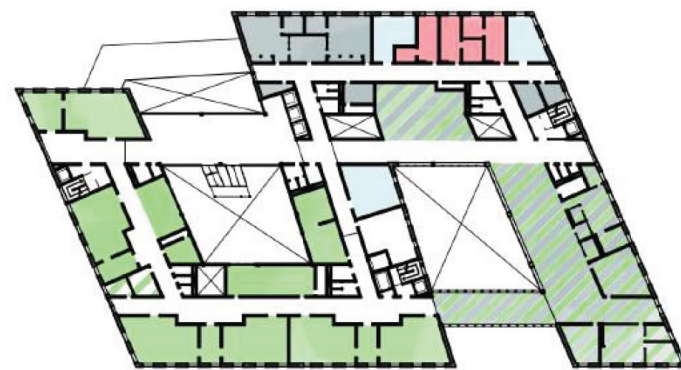
Ground floor - Public functions



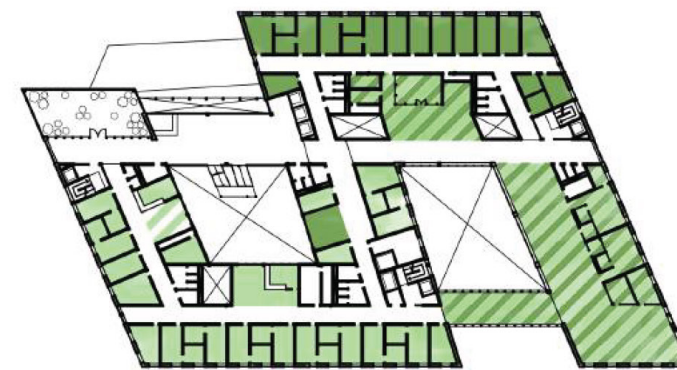
Floor 1 - Primary care



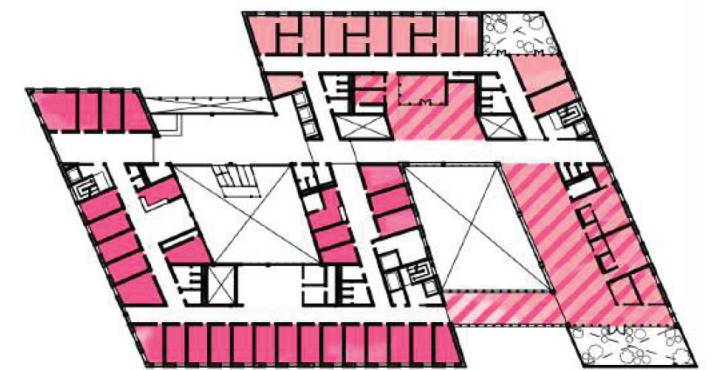
Floor 2 - Sampling and imaging



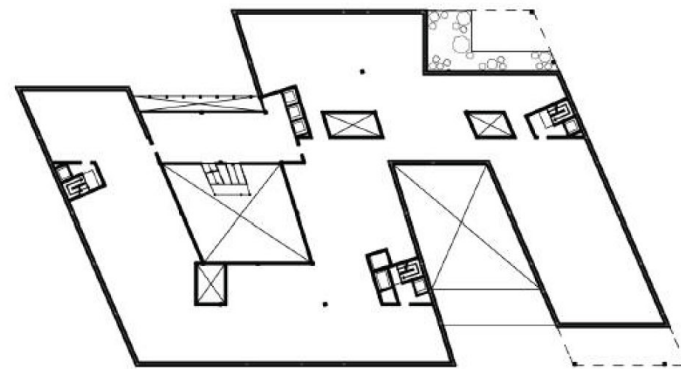
Floor 3 - Surgery department, imaging, endoscopy and gynaecology



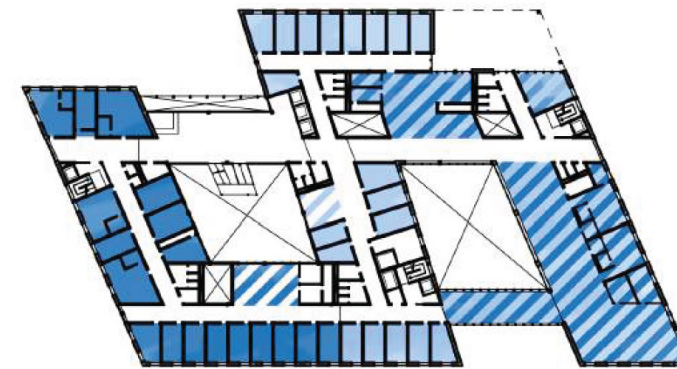
Floor 4 - Day care and pre/post operation



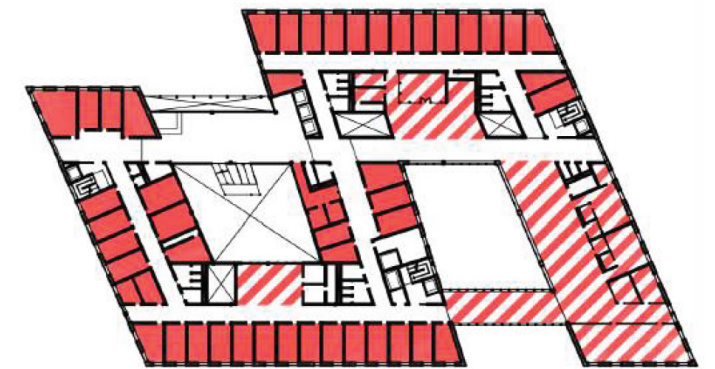
Floor 5 - Dialysis and gynaecology



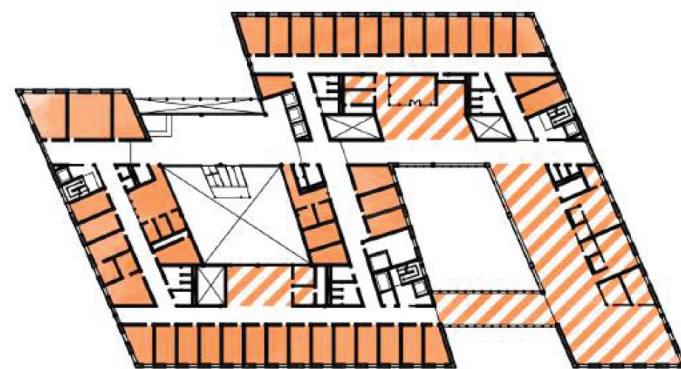
Floor 6 - Technical floor



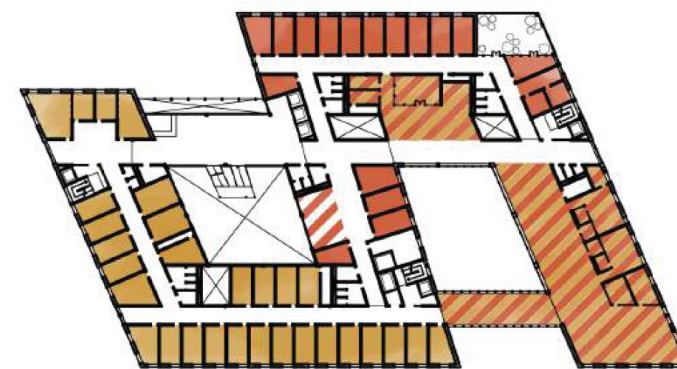
Floor 7 - Rehabilitation and orthopedics



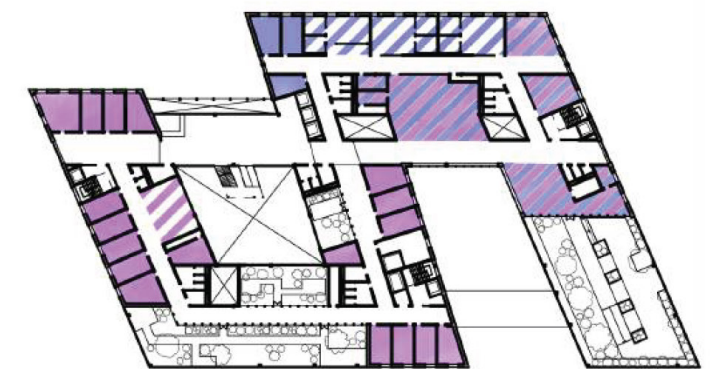
Floor 8 - Adult specialist care



Floor 9 - Children and youth



Floor 10 - Pain center and ear nose & throat



Floor 11 - Psychiatric care unit and research center



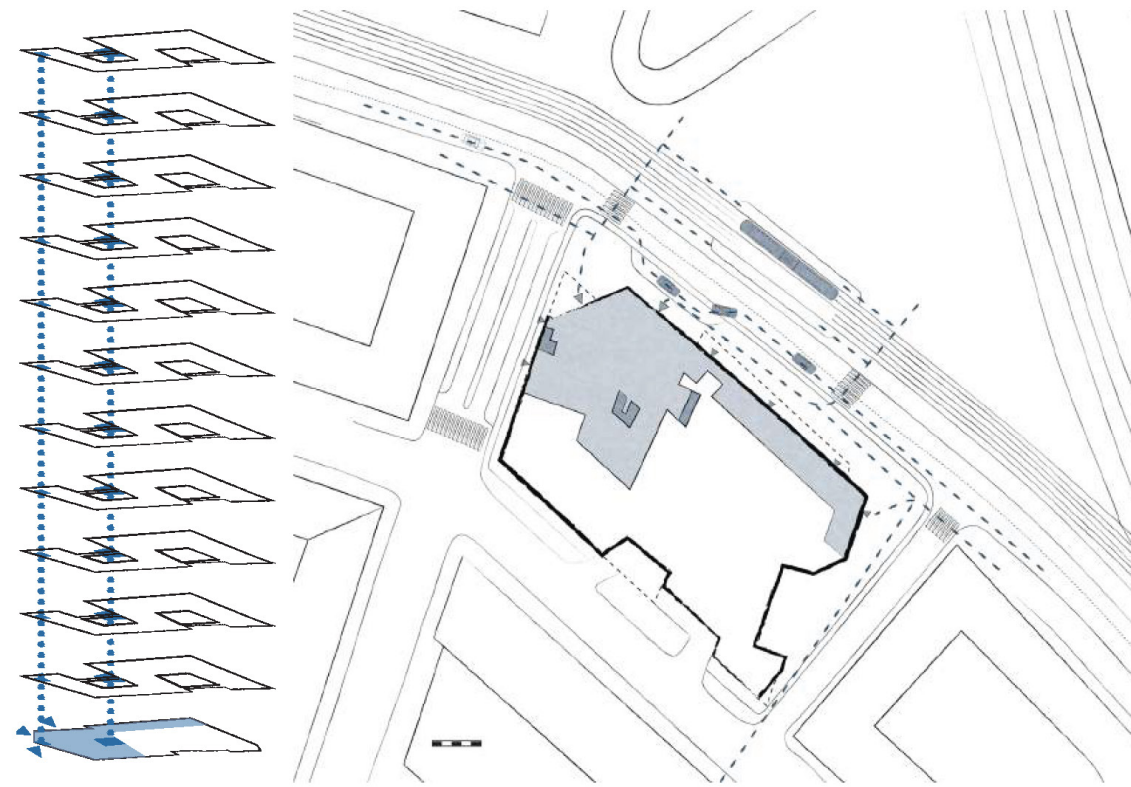
# Communication

To ensure the efficiency and integrity of the hospital and its users, the flows of the three main groups (patients, staff and goods) are separated in the building. Patients enter the building at the east side of the building and use the elevators and stairs around the north atrium. Staff can either enter the hospital through the main entrance or the staff entrance on the west side of the building. Staff members use the elevators and stairs around the south atrium.

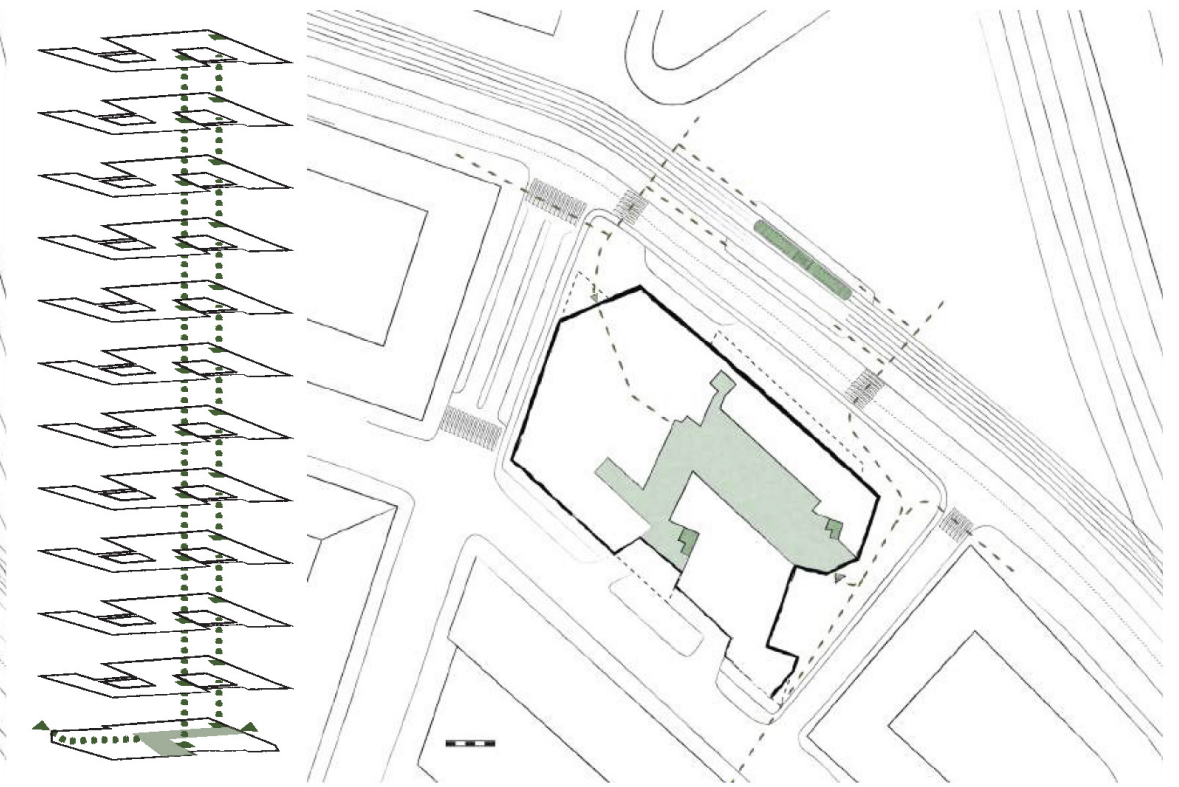
From the goods distribution department at the ground floor, the goods can be transported up in their own elevator to the different floors. The elevator stops on each floor in a storage room, from where the goods can be distributed to the examination rooms. Each examination room has a closet build in the wall, which can be reached from the corridor and the examination room.

The emergency elevator is located at the south side of the building, close to the ambulance pick up spot.

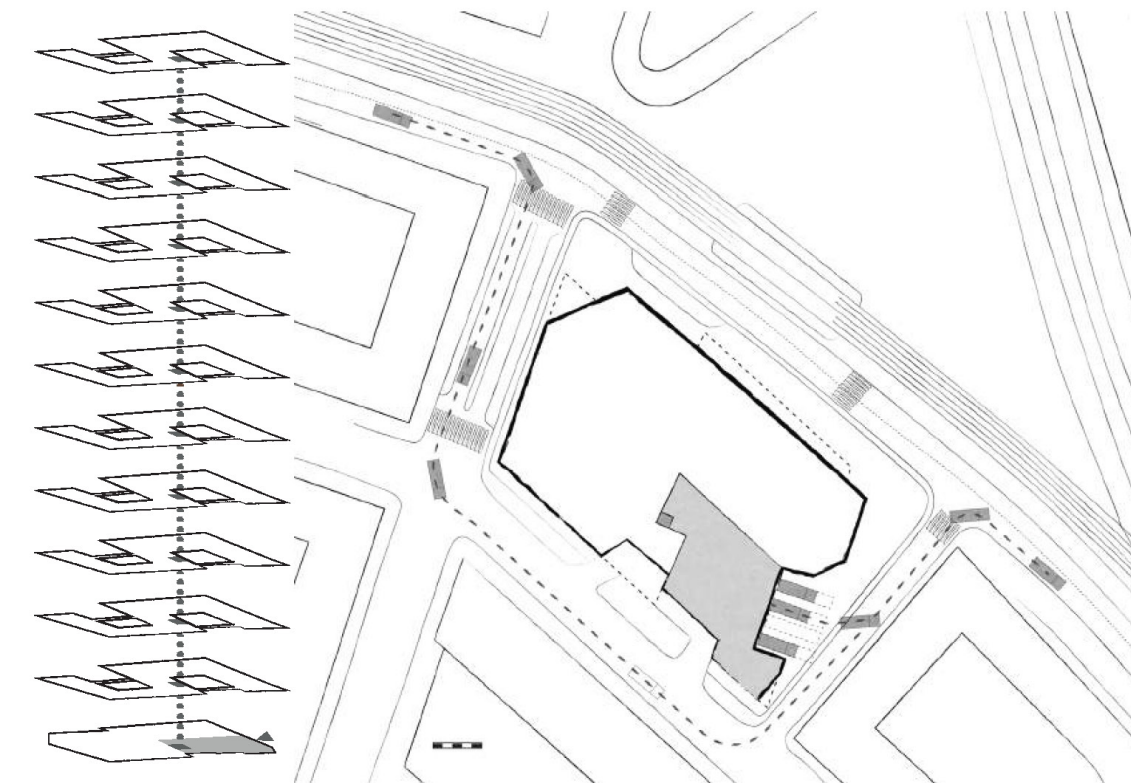
Patients



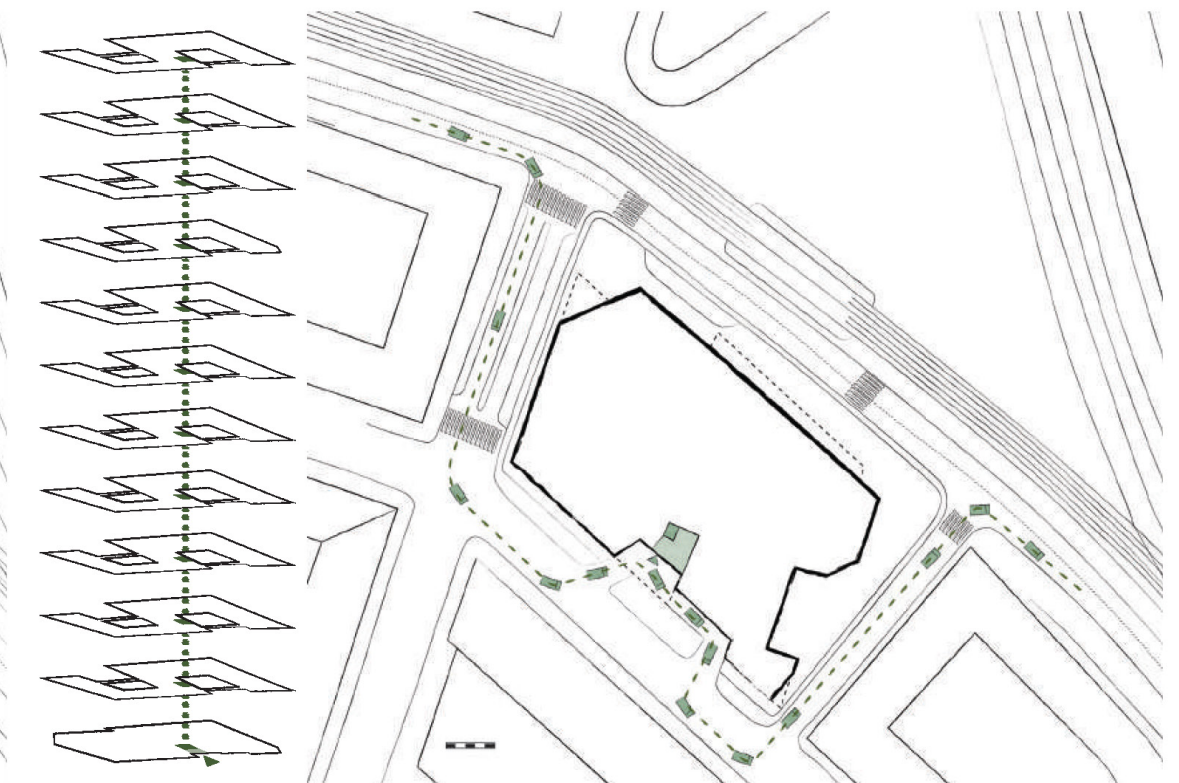
Staff

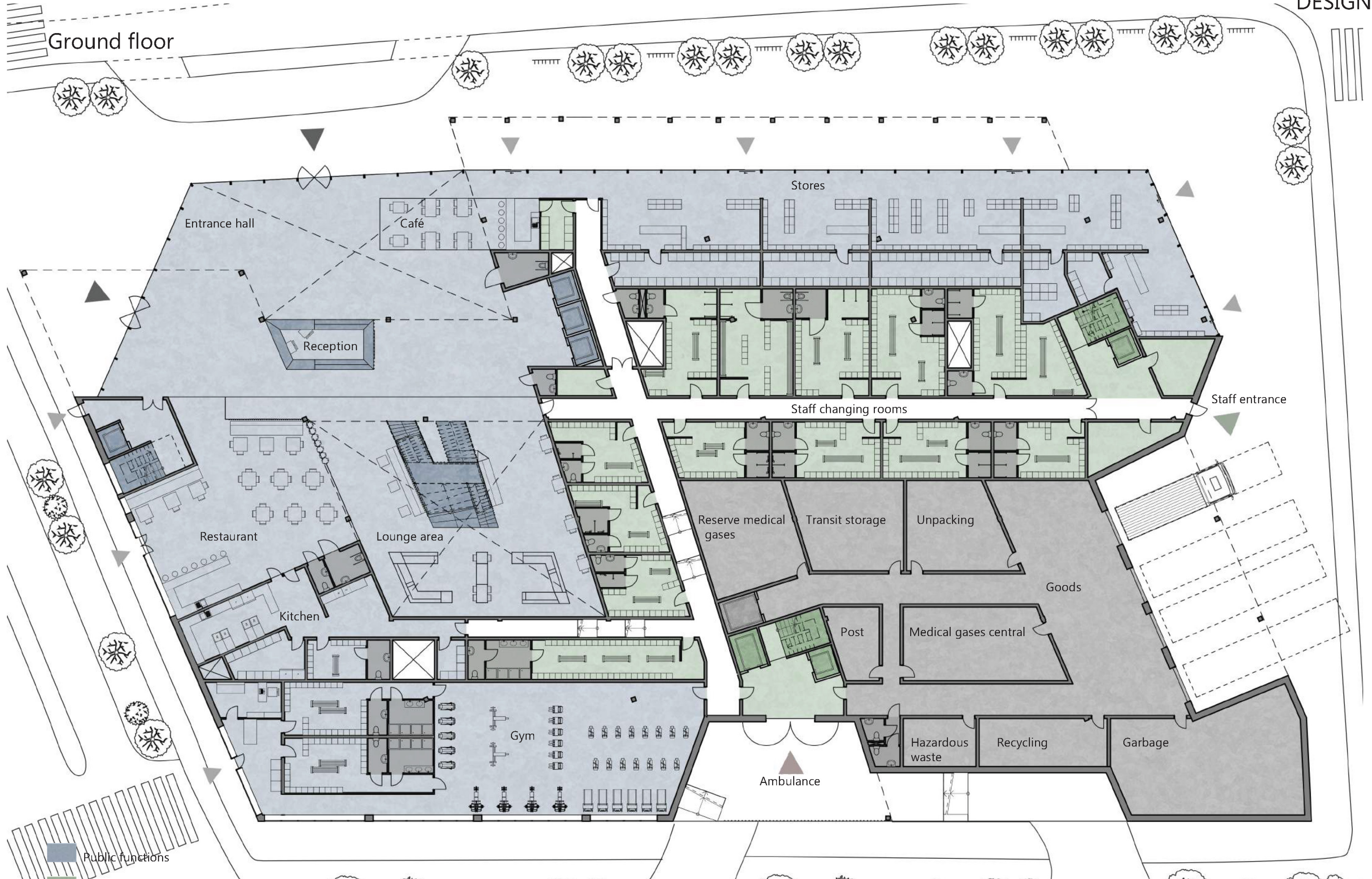


Goods



Emergency





Ground floor

Entrance hall

Café

Reception

Restaurant

Lounge area

Kitchen

Gym

Stores

Staff changing rooms

Reserve medical gases

Transit storage

Unpacking

Goods

Post

Medical gases central

Hazardous waste

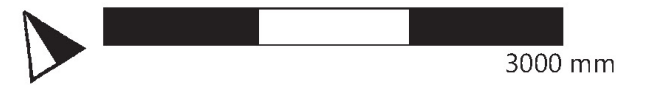
Recycling

Garbage

Ambulance

Staff entrance

- Public functions
- Staff area
- Goods







A. Entrance area



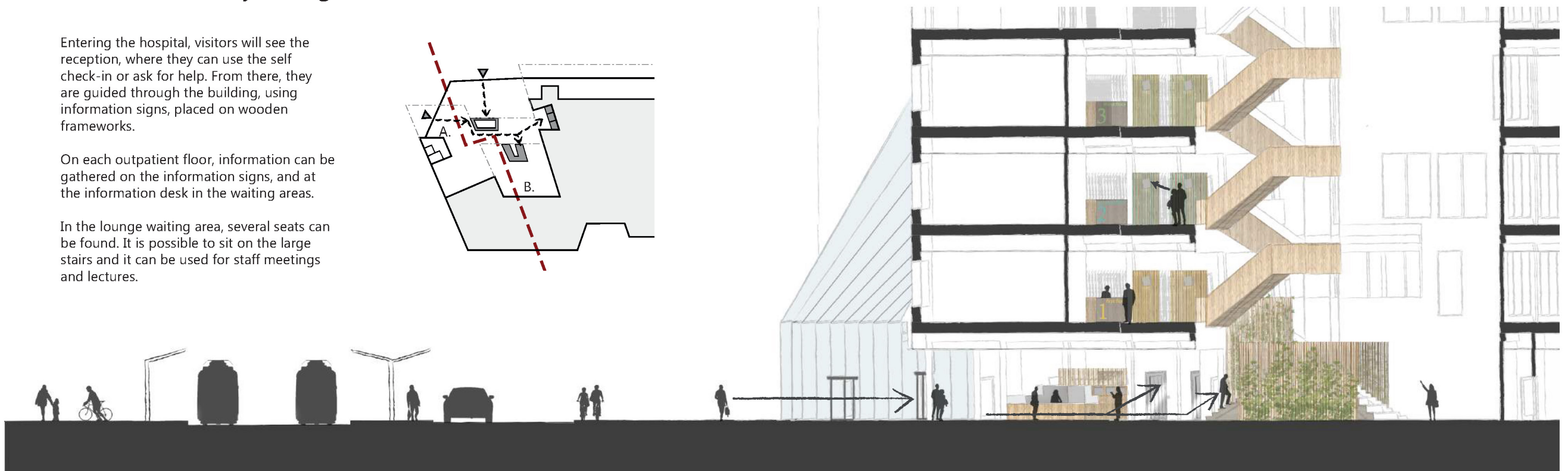
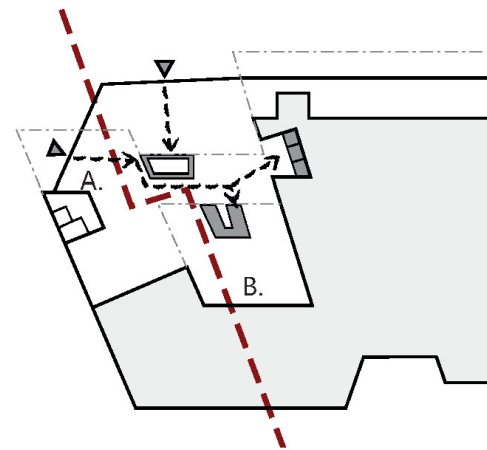
B. Lounge waiting area

## Entrance and wayfinding

Entering the hospital, visitors will see the reception, where they can use the self check-in or ask for help. From there, they are guided through the building, using information signs, placed on wooden frameworks.

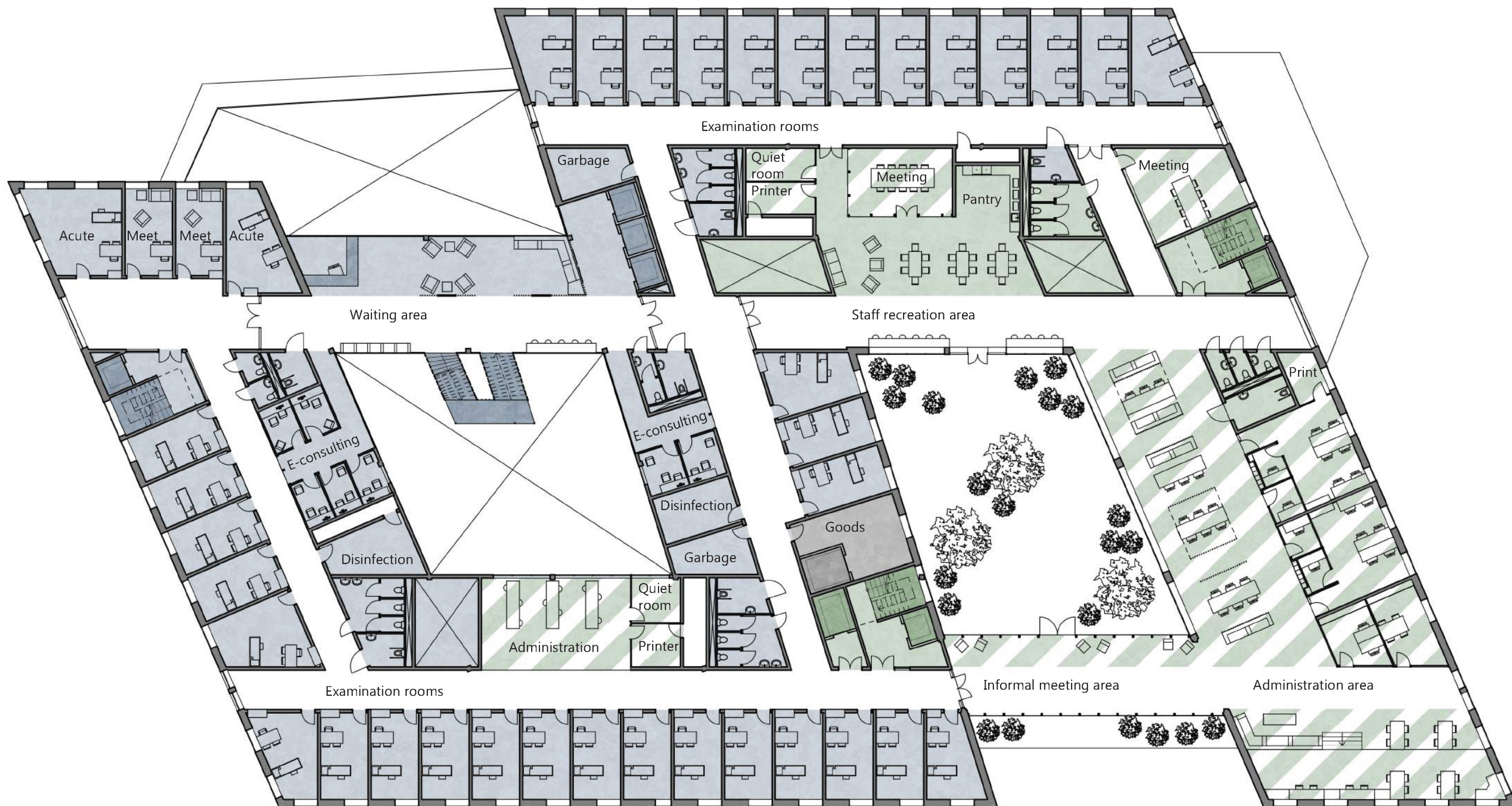
On each outpatient floor, information can be gathered on the information signs, and at the information desk in the waiting areas.

In the lounge waiting area, several seats can be found. It is possible to sit on the large stairs and it can be used for staff meetings and lectures.

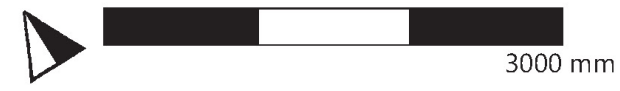


Section through the square and north atrium

First floor - Primary care



- Hospital functions
- Goods
- Staff area
- Staff administration area

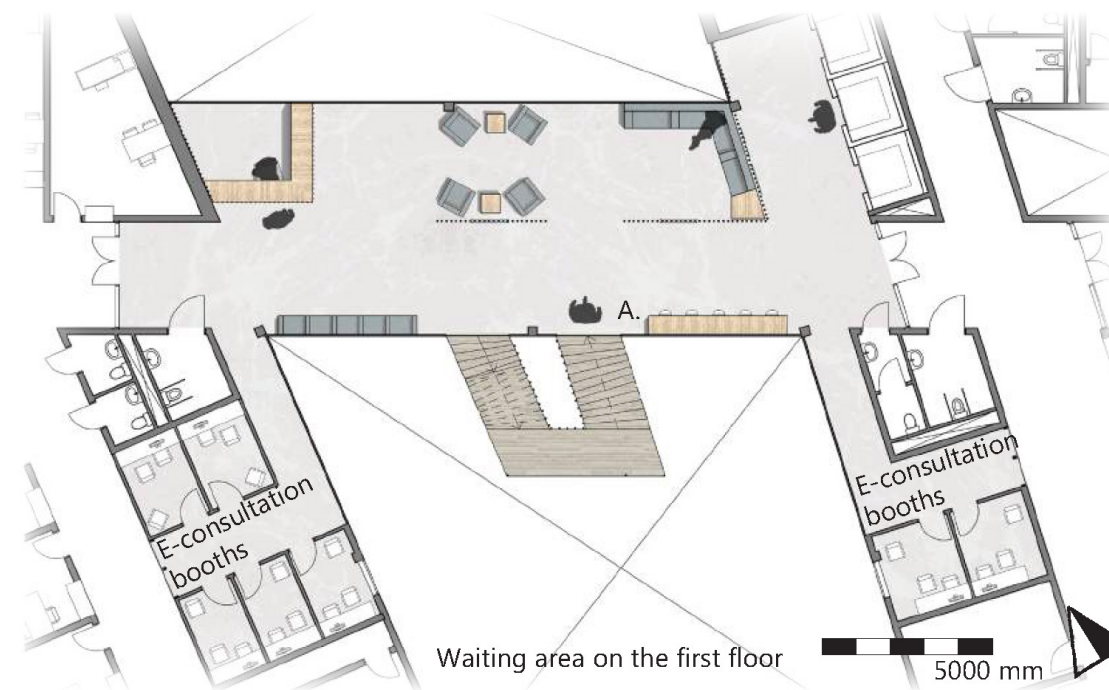


## Waiting area and self-help booths

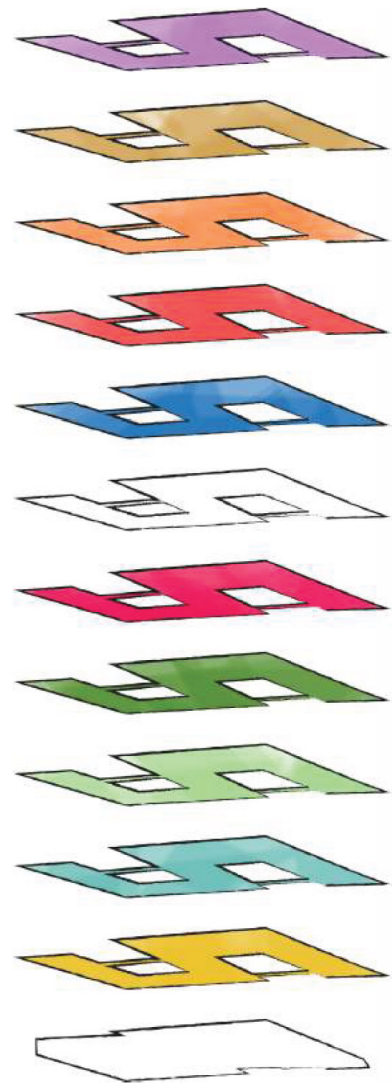
In the waiting area a resin floor is used with a subtle pattern. The wooden framework, which is used on the ground floor, guiding patients towards important wayfinding elements, is also used on the upper floors. The wooden framework marks the information desk. Also, these frameworks separate the different waiting areas and show information of the department.

Each floor is identified by its colour. The waiting area shows this colour on the wooden framework and information desk.

At several floors, small booths are located around the atrium. These so called self-help booths, host functions such as self-sampling machines, and computers for e-consultations. The e-consultation booths can be found on the first floor. The self-sampling booths are located at the sampling, children, and adult department.



Interior materials of the waiting area



Colour coded stacking diagram



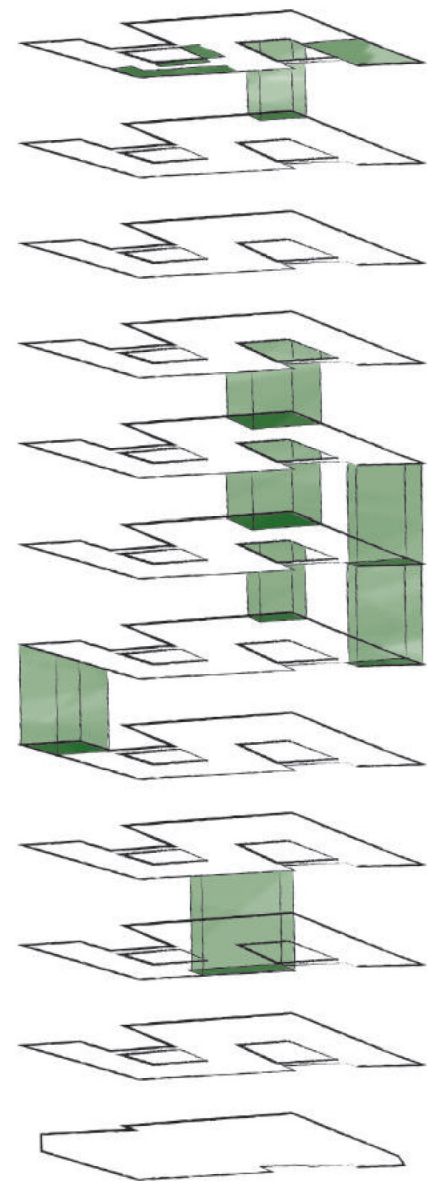
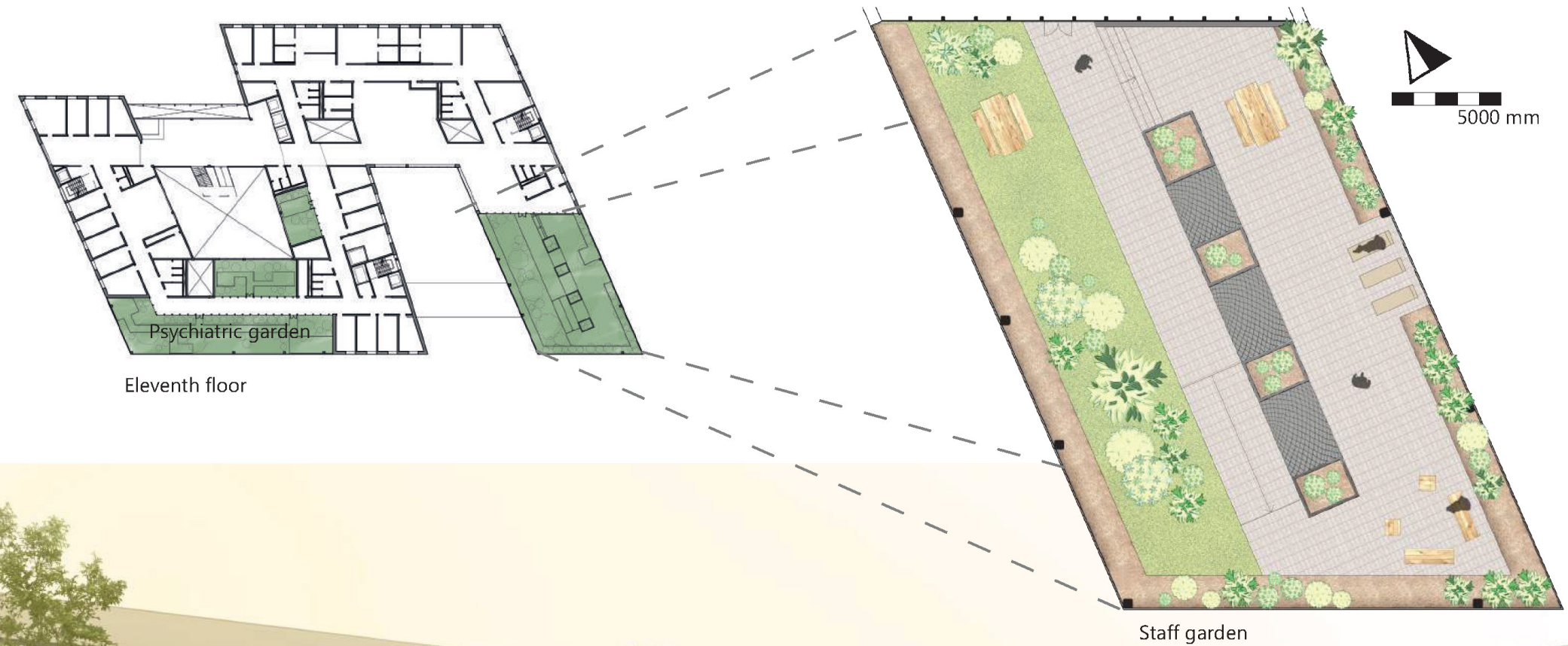
A. Waiting area

## Roof top gardens

The building has several garden areas accessible for patients, visitors, and staff.

There are gardens on the second floor next to sampling and on the fourth floor, where patients from the day care department have the opportunity to rest outside. On the fifth floor there is a garden for the dialysis and gynaecology visitors. Also, the pain centre at the tenth floor has access to a garden.

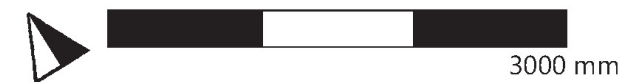
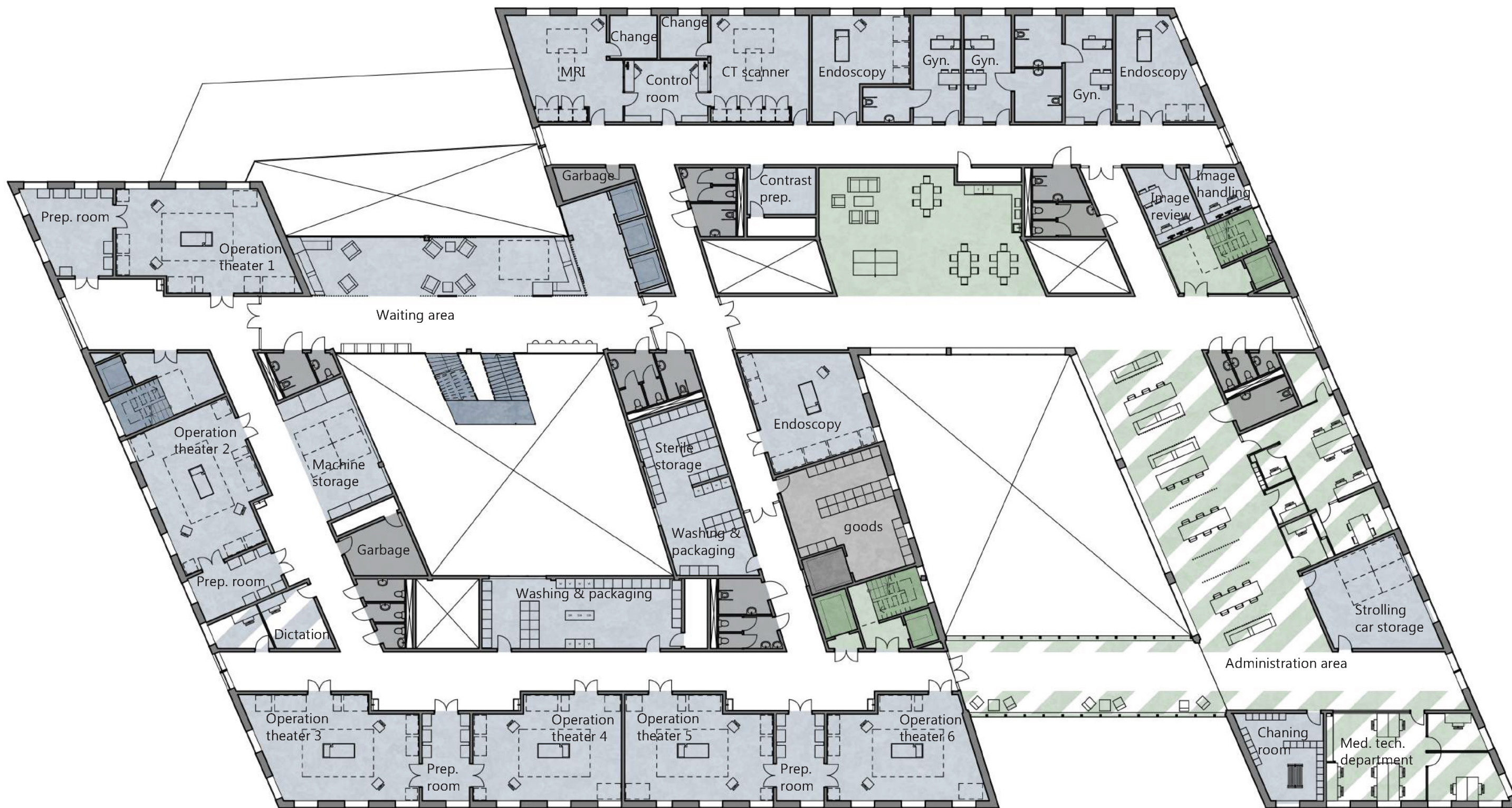
On the eleventh floor there is both a garden directed to the psychiatric department and one for the staff, next to the staff lunch room. In the outdoor space there are different relaxation areas, such as picnic tables, net hammocks, and lounging chairs in the greenery.



Gardens stacking diagram



Third floor - Surgery, Imaging, Endoscopy, Gynaecology

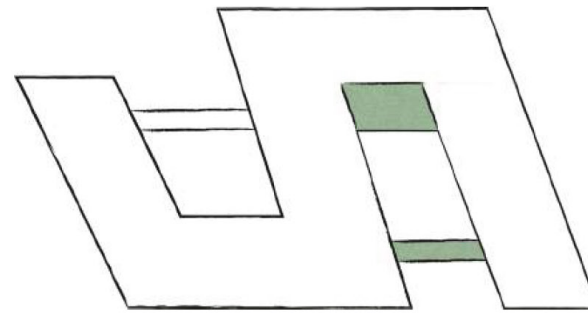




## Staff

On each floor staff areas are situated next to the south atrium. At the inner part of the atrium a staff relaxation zone is located, combined with a pantry. This is where the staff lunch room is located on the eleventh floor.

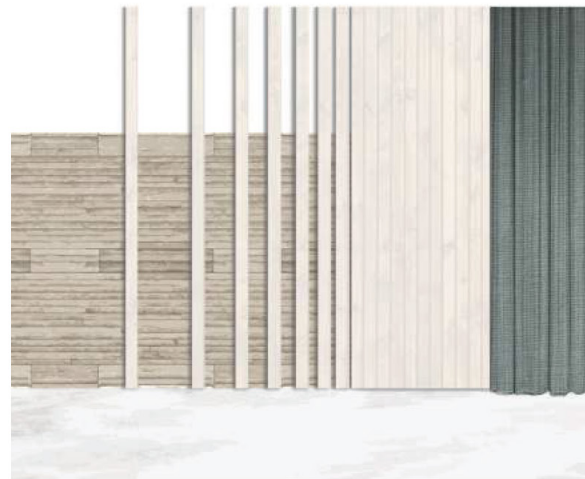
The staff bridge on the outer part of the atrium houses an informal meeting spot for the different staff members.



Staff area

## Materials

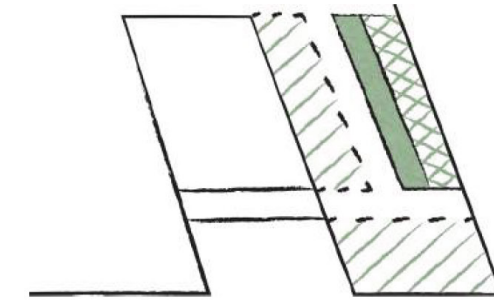
The materials used in the staff area are similar to that used in the waiting, and patient areas. The pattern of the resin floor is different from the patient area, and also the fabric used for the couches and soft materials differs.



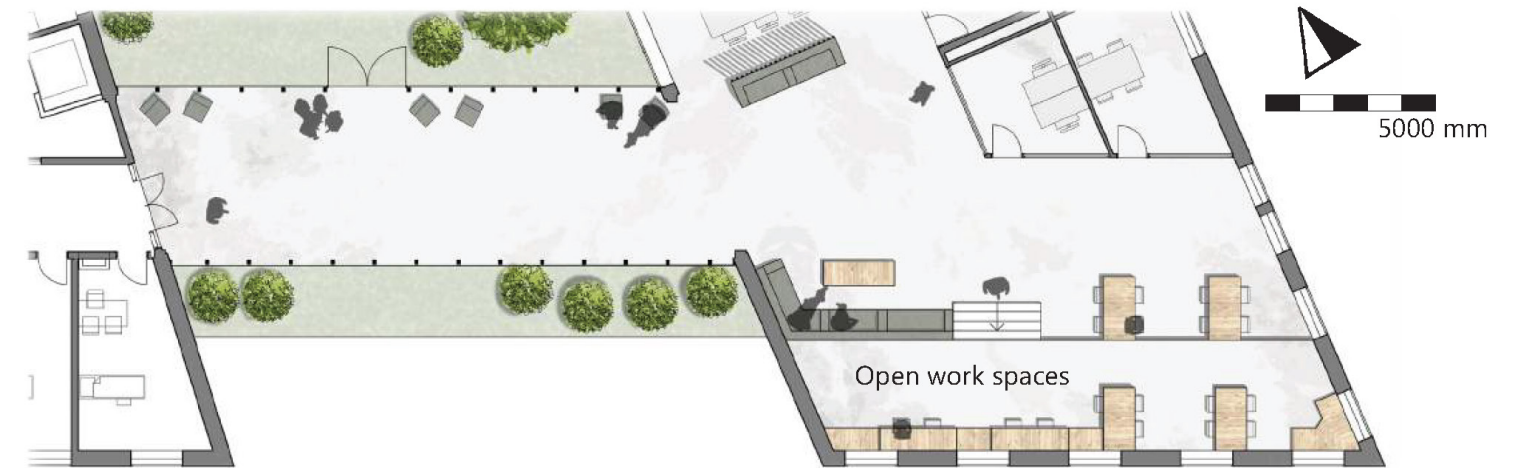
Interior materials of the staff area

## Administration

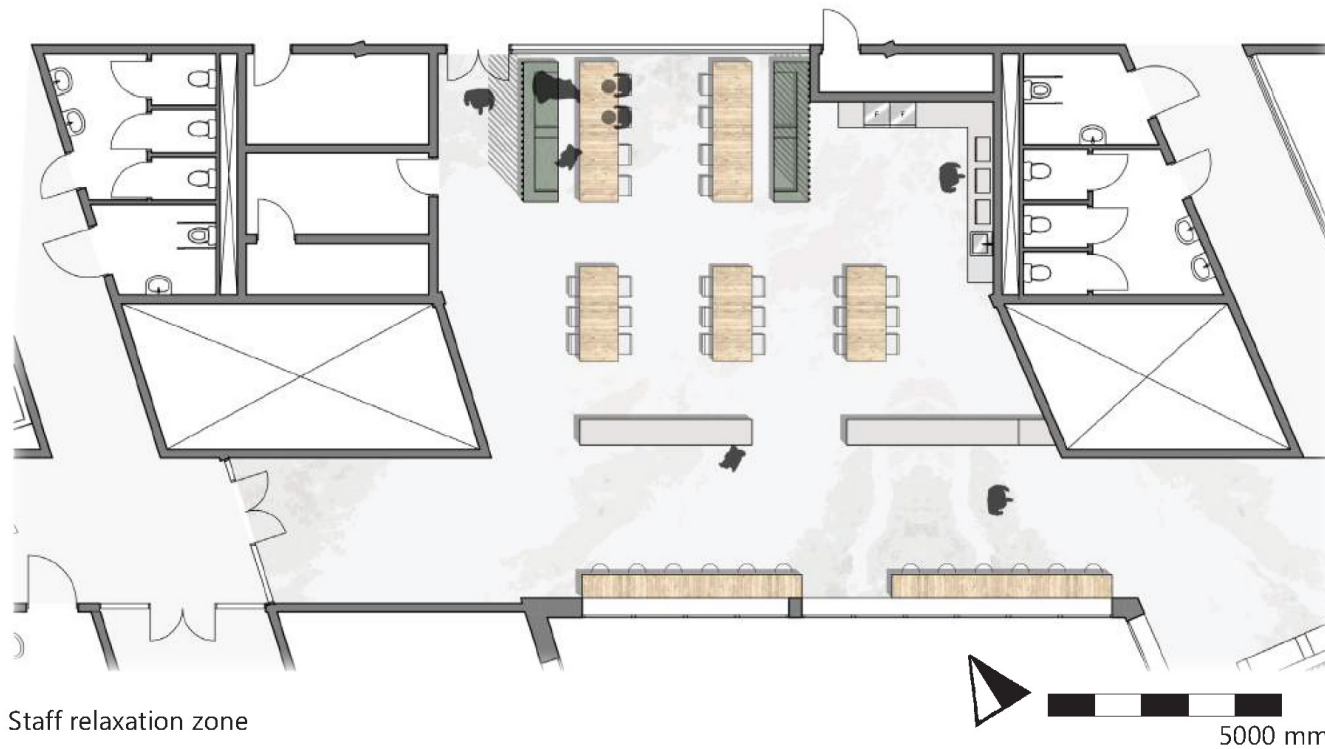
The east wing of the building offers space for the administration of the hospital. In the administration area, different working spaces are situated. Around the atrium, and at the southern end of the corridor, open and flexible workspaces can be found. While, at the east facade, closed rooms provide single work spaces and group work spaces.



Diverse administration areas



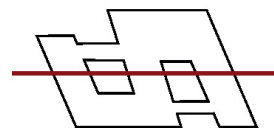
Staff administration area on the first floor



Staff relaxation zone



Atria



The north atrium provides several viewpoints towards the open space. These points consists out of administration spaces, waiting areas, play zones for kids, and self-help booths.



# Facade

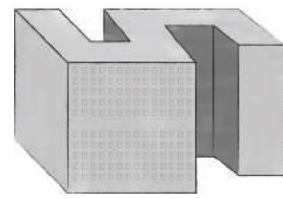
The conceptual idea of the facade is seeing the building as a solid mass. Out of this mass gaps and atria are created before finally wrapping the building in glass.

The glass facade covers the exterior facades. The gaps and atria are covered with a light beige sand stone. Tiles are placed horizontally and give the interior a warm atmosphere.

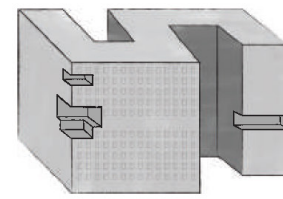
The glass facade is made out of panels, on which horizontal stripes are sanded. The panels are connected to each other with metal joints.

The north atrium is covered with non-reflective glass panels connected to each other with a steel framework.

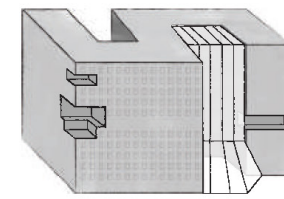
In the gaps, greenery is planted. The greenery is visible from the exterior.



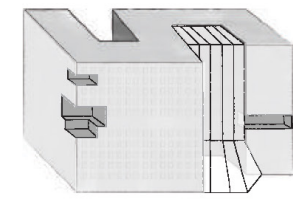
Building in stone + windows



Gaps in building



Atria



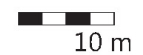
Glass wrapping around the building



Materials of the exterior



North facade



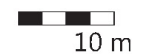
South facade



West facade



East facade





Aleksandra Suwinska | Siri Pålsson | Alexandra Touw