

# FLAWS

## NEARBY HOSPITAL IN FRIHAMNEN

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“A HEALING EXPERIENCE FOR ALL IN A NEW URBAN SETTING”



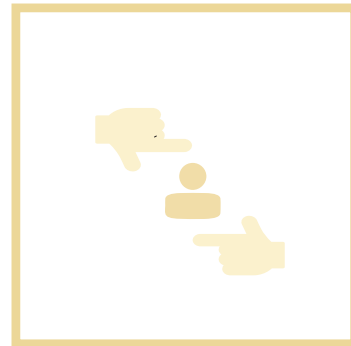
PERSPECTIVE FROM ENTRANCE STAIRCASE

# VISION FROM THEMES



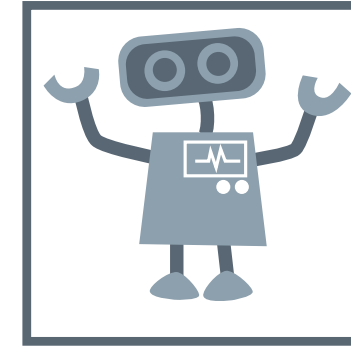
## THE HEALING ENVIRONMENT

Evidence show that nature have a good impact on health so greenery should be brought into the hospital.



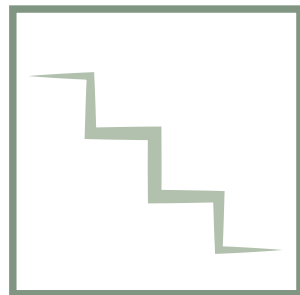
## PERSON IN FOCUS

Healthcare today is focusing more on person centered care which makes the patient more involved in their own healthcare.



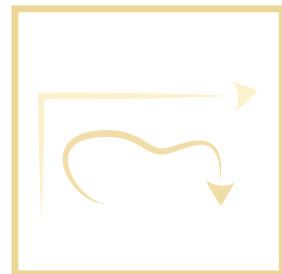
## FUTURE OF HEALTHCARE

The healthcare system is developing and a hospital needs to be adaptable for future needs.



## ACTIVE ARCHITECTURE

By having light and inviting staircases in the building the architecture promotes health.



## SEPERATE FLOWS

By separating flows the wayfinding for staff and patient is more efficient and it lowers the spreading of diseases.



## DIGITAL HEALTH

Technology will increase the efficiency of future hospitals, for example by having self check-in system.



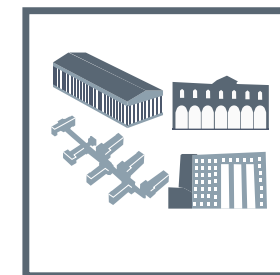
## NATURE

Bringing nature into the building creates a calming environment all year around.



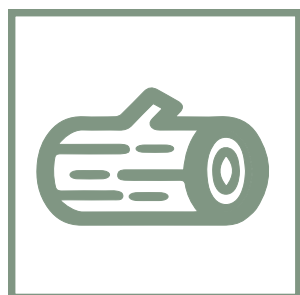
## SCALE

Working with scale as an architectural element to put the person in focus and create clear division between different areas.



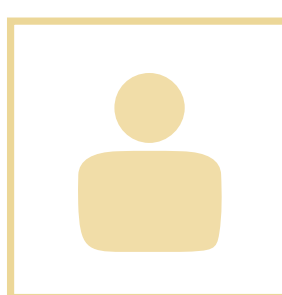
## LEARN FROM HISTORY

Taking inspiration from historical hospitals is a way to make a new project that can last in time.



## MATERIALS

Wood is used to get a warm and embracing interior in contrast to the light exterior.



## SAFETY

A clear structure improves the patients sense of security.

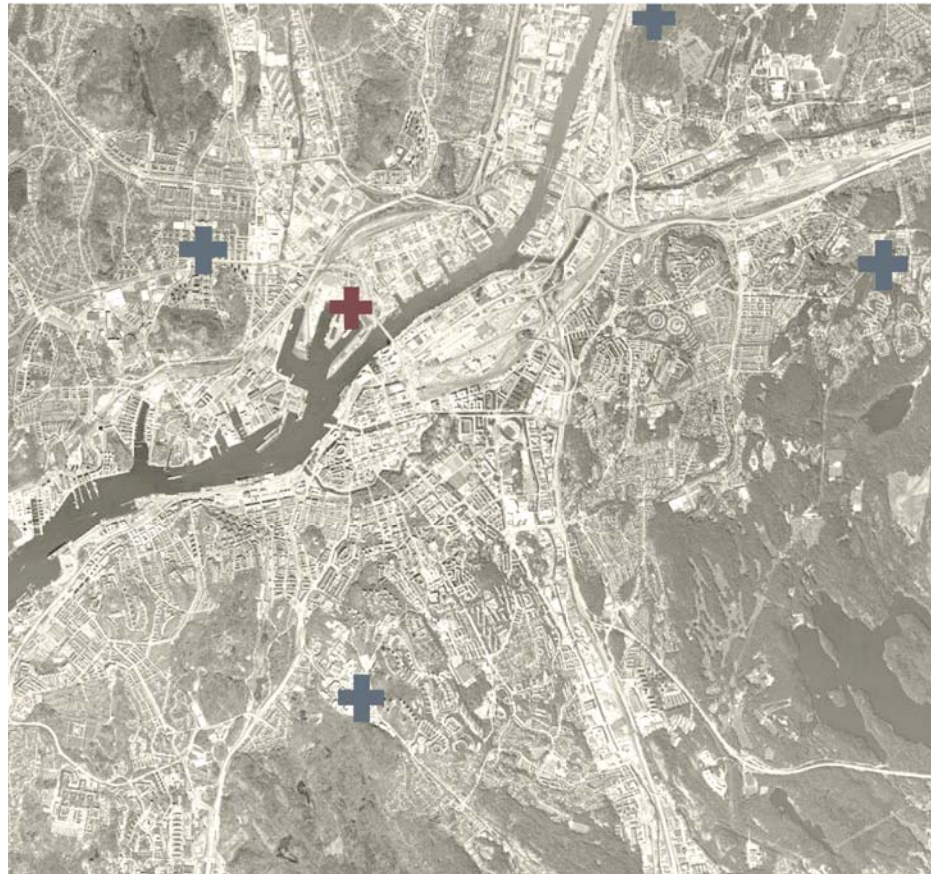


## FLEXIBILITY

By having a general structure the hospital is adapteble for future needs.

# URBAN

The Healthcare system today is modernizing there for Gothenburg is planning a new nearby specialist hospital in the expansion of the city center at Frihamnen. The area is visioned to be a part of the inner city with an urban feeling that gives the opportunity to have a hospital as a part of the city life.



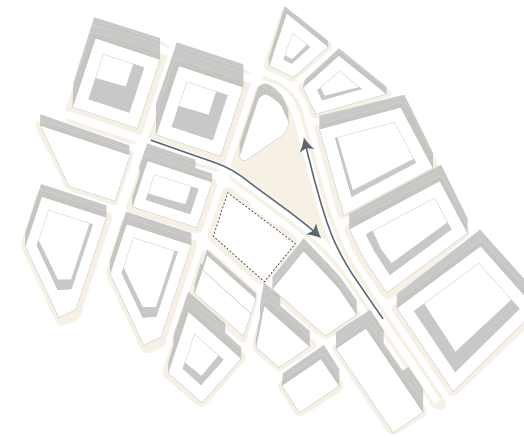
The hospital will be a part of a network of hospitals in the Gothenburg area to reduce patient pressure from the big hospitals and bring healthcare closer to the patients. Therefore flows and communications are important aspects.



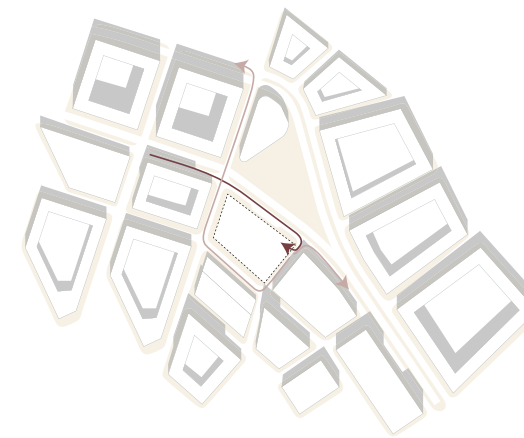
In the plans for Frihamnen there are some functions that will impact the flow along the site, the communication hub for the area, schools, the new park area and public functions.



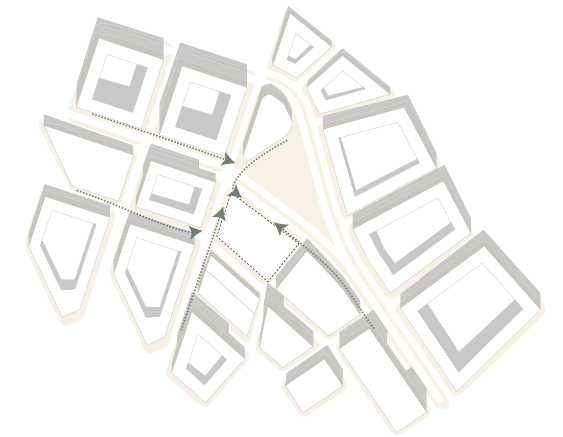
The goods will arrive from the main road onto the road with the smallest amount of pedestrian.



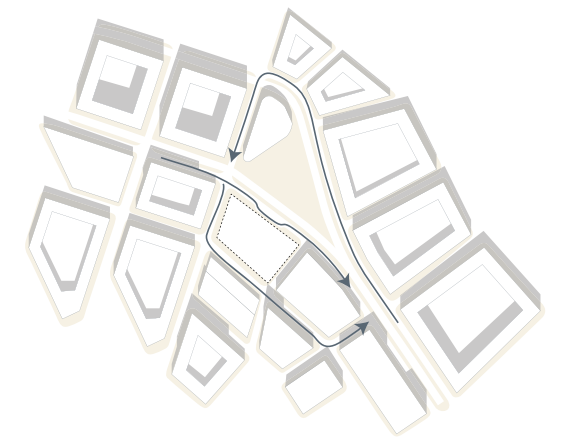
The planned tram tracks pass right by the hospital and creates a square on the north side of the building.



The ambulance has a pick-up at the same side as the goods to have the most effective flow and still have a secluded place for privacy.



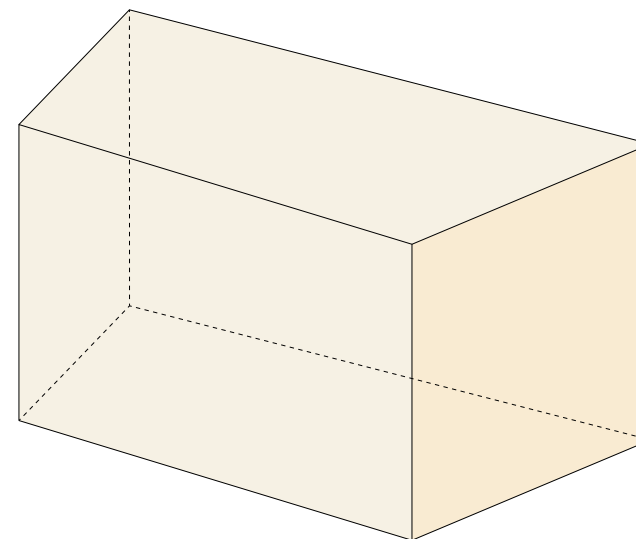
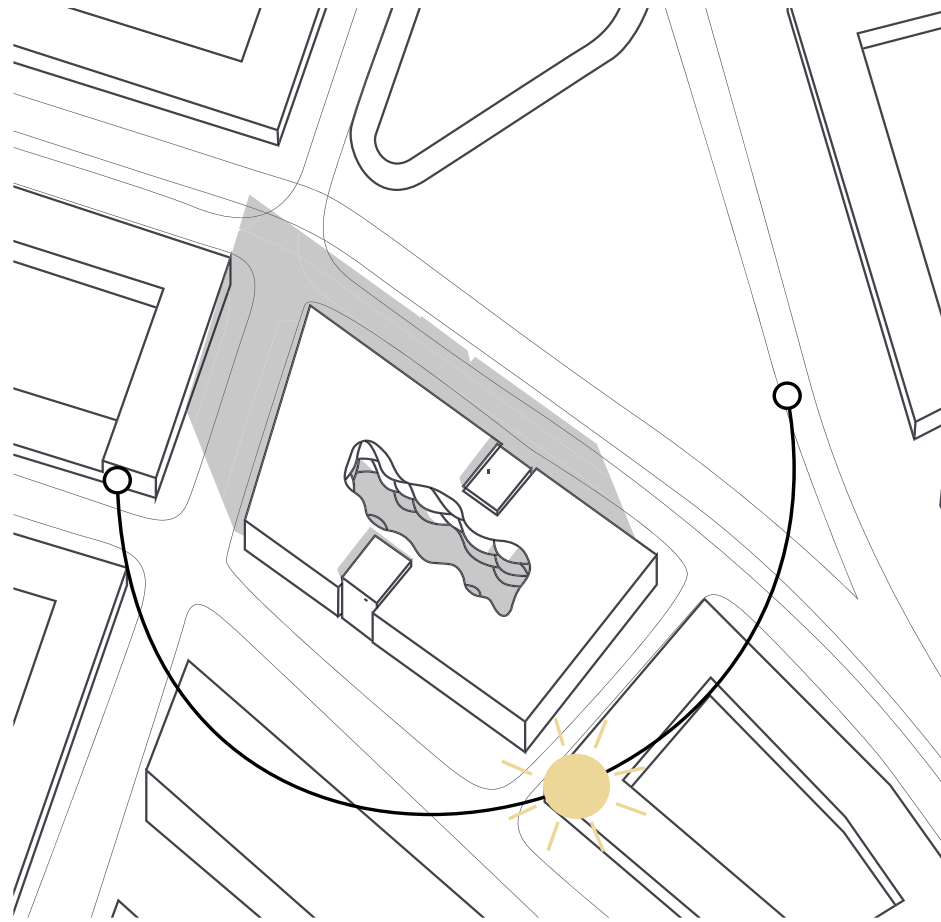
Pedestrians will pass the hospital on the northern and western sides due to main roads and functions.



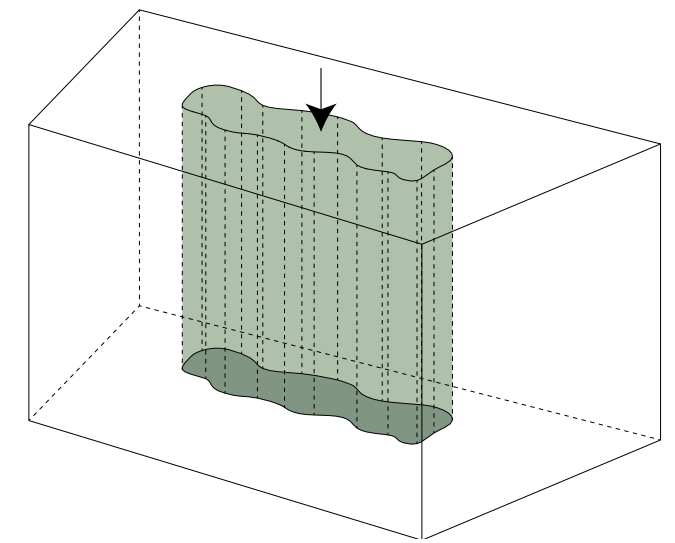
Patients arriving by car or taxi will arrive from the west due to the main road being a one way road. There is a drop off by the main road as well as parking by the roadside around the building.

# FORM CONCEPT

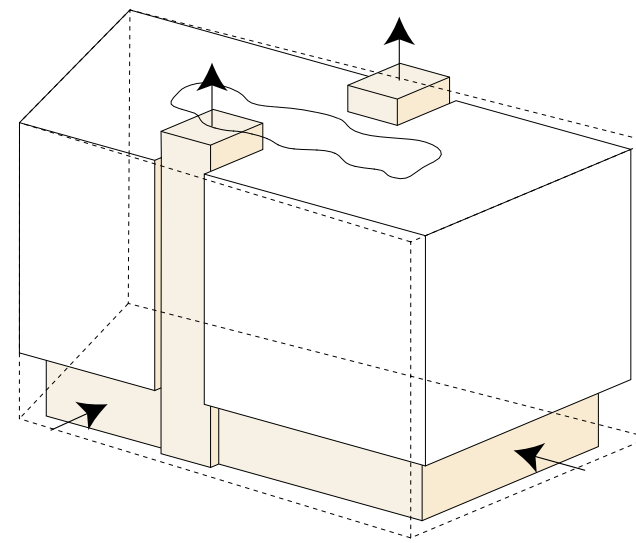
The site for Frihamnens nearby hospital is quite narrow for a large hospital takes up all of the site to enable lowering the building a bit in consideration to the surrounding buildings. The shape of the site gives the building character and it becomes a strong volume that fits into the urban context. The robustness of the volume also turns the hospital into a monument in the neighborhood which is emphasized by the hospital lighting up like a lantern during night.



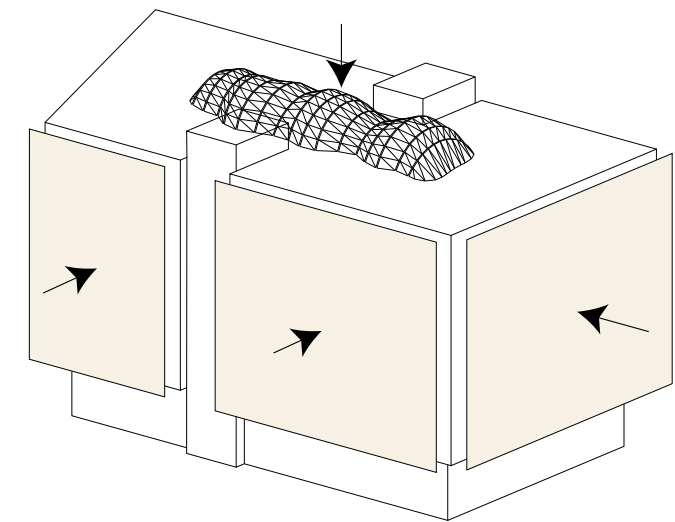
Starting off by filling the whole site of 4250 sqm with a volume.



An atrium was added to bring light in the volume.



The volume is broken up by taking in the lower part and accentuating the vertical communication.



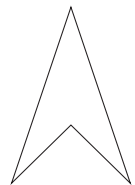
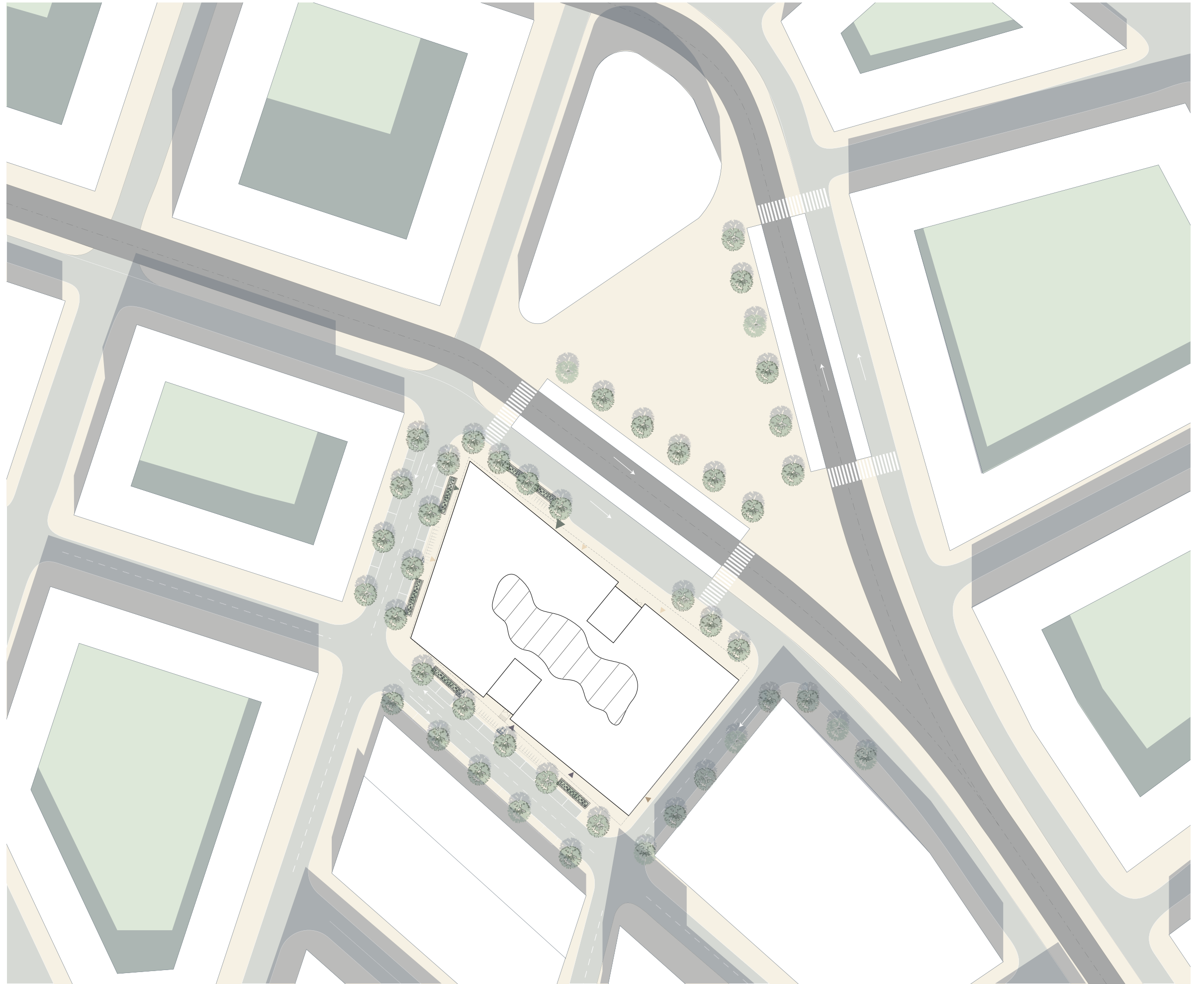
An active faced that mirrors the activity inside is added as well as glass ceiling on the atrium to be able to activate it all year.

# SITEPLAN

The site of the building is 4250 sqm and the built footprint is 3070. Higher up in the hospital the floors are 2720 sqm plus the balconies in the atrium.

In total the hospital have 22 400 sqm and have 272 patient rooms.

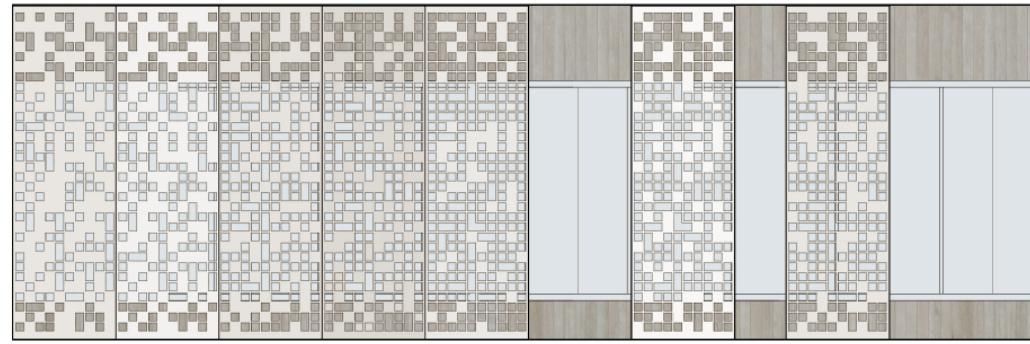
3000 sqm is assigned for public functions like, pharmacy, café etc.



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1 5 10 25

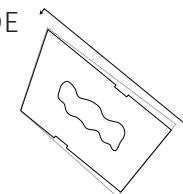
# FACADES

The scale of the building is taken down by an active facade. A double facade containing a glass facade and perforated screens with able you to close direct sunlight out and gives privacy in the urban area if needed for the activity inside. In the morning the facade opens up to mirror the activity inside the hospital. The active screens gives variation to an otherwise robust volume. When the hospital closes down for the night it works as a lantern in the new area marking the square and gives a soft light to the surrounding.



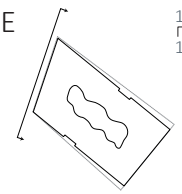
NORTH FACADE

1:400  
1 5 10



WEST FACADE

1:400  
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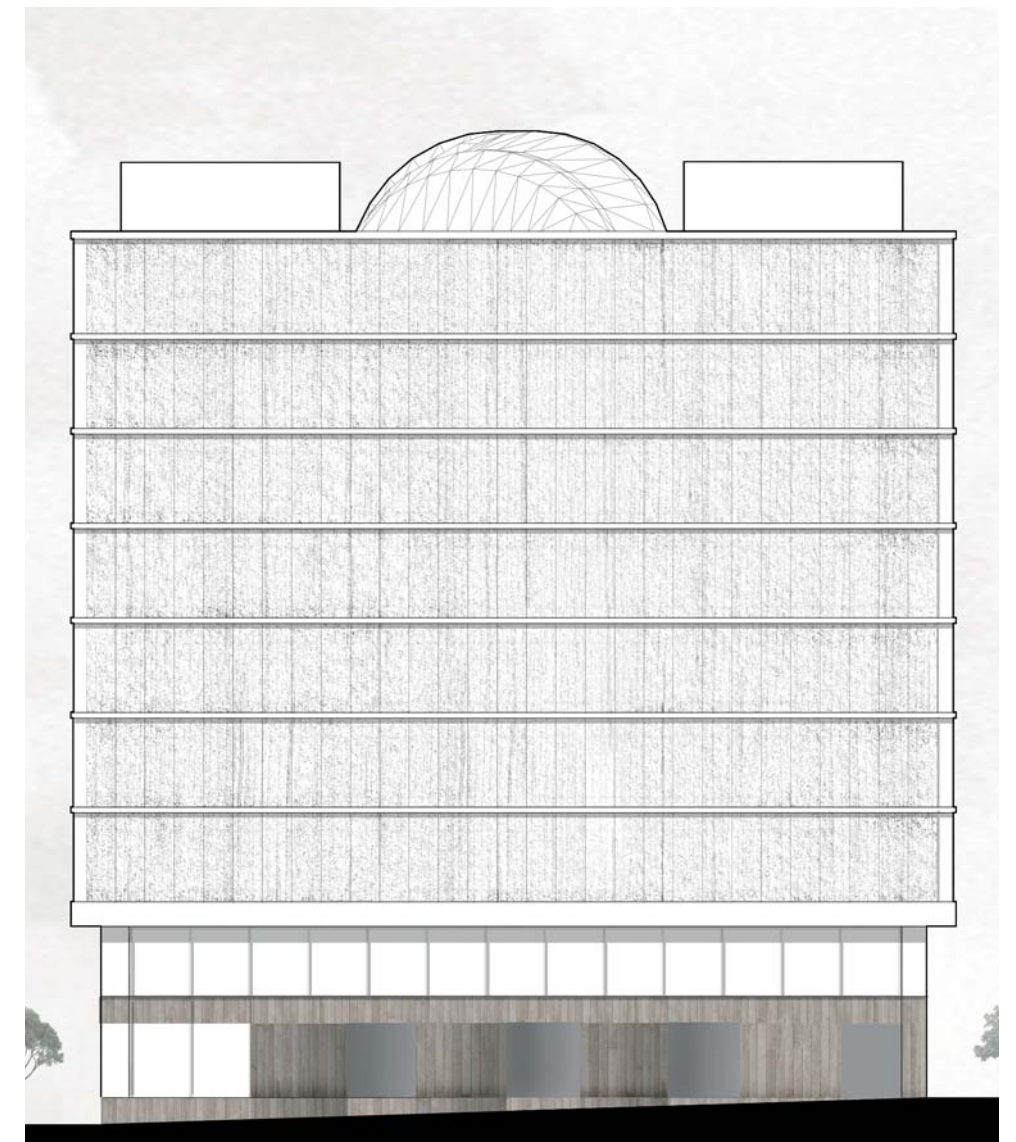
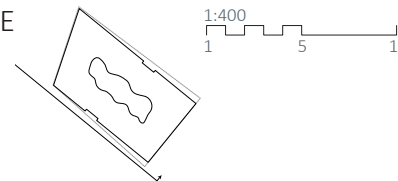


# MATERIALITY

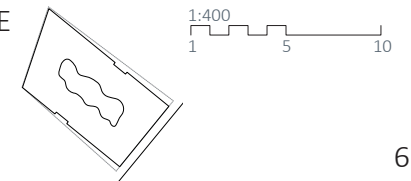
The materiality shows a Scandinavian architecture with light materials, a warm white facade with variation in shade rather than colour. The facade together with a warm wooden inside gives the building a clean and welcoming feeling. The solution for the facade is inspired by the Knowledge center at St Olavs hospital in Trondheim.



SOUTH FACADE  
Night view



EAST FACADE



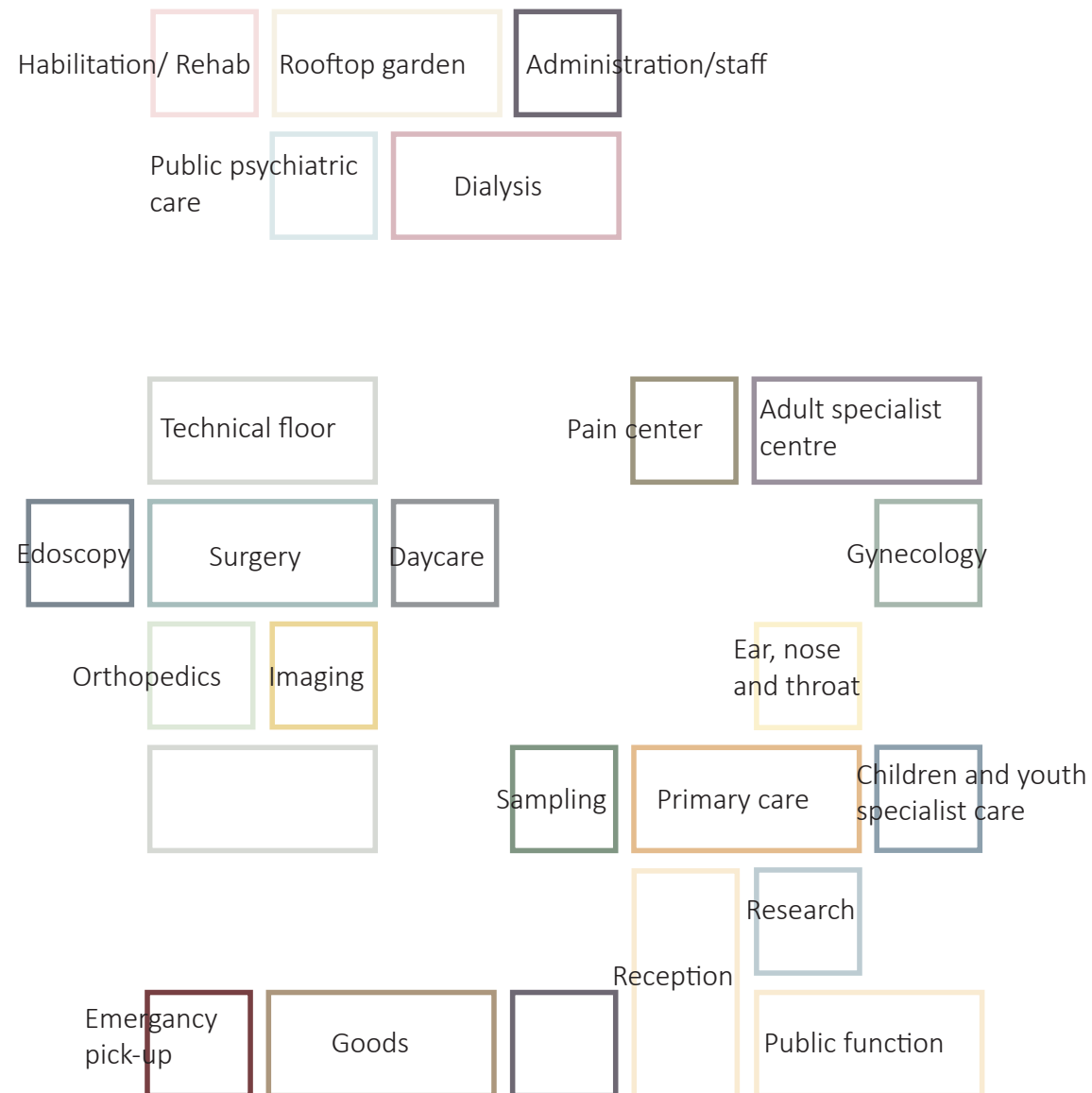


NIGHT VIEW FROM NORTH



# PROGRAM

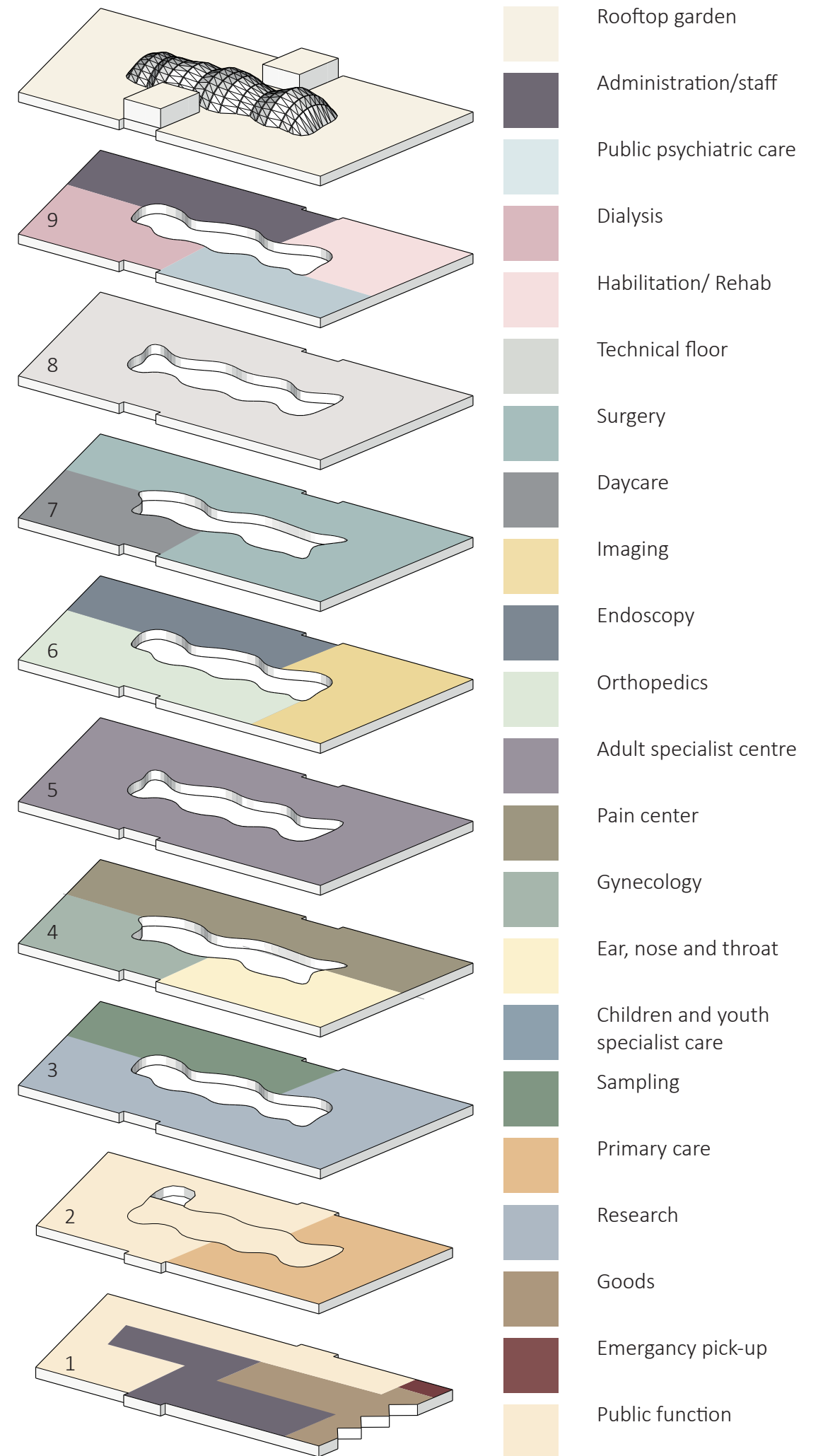
Frihamnen nearby hospitals is planned for 220 000 visits a year out of them 100 000 is doctor visits. Since the hospital is planned to have daytime opening hours, it is going to be 128 patients every hour. If the average doctors visit is 30 minutes the amount of rooms occupied is generally 64 rooms. We have planned for having 28 examination rooms on every floor. Giving more space for having an active workspace for the staff to enable research at a wider range.



The program is primarily outpatient care, but also includes 6 operation theatres and some daycare. The different department constellations and close connections has been the base for organizing the stacking of the building.

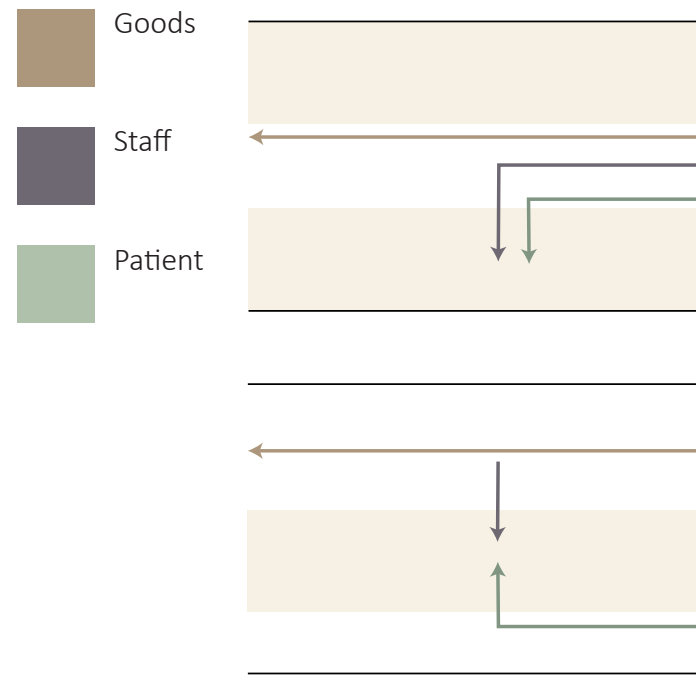
There is an advantage in having the departments with the grandest flow close to the entrance and increase the privacy higher up in the building. The activities where you spend the longest time is located higher up for light and views.

The public functions are divided on the two lower levels to open up the hospital for the public and making the hospital a part of the everyday life. The operation is located in the middle under the technical floor and on top of imaging. The building becomes 9 floors with a rooftop garden on top.



# CONCEPT

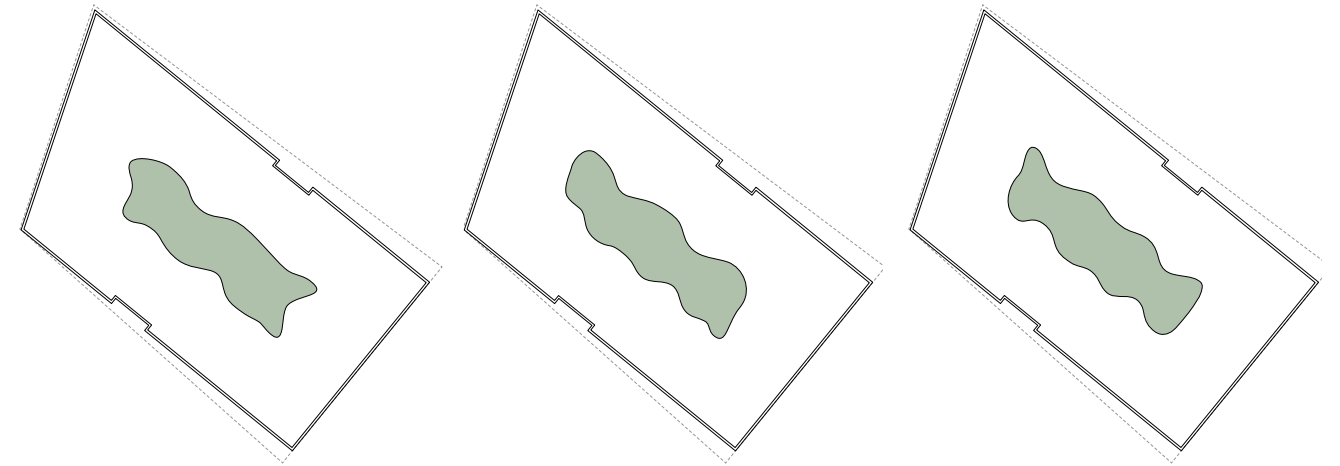
## FLOWS



Originally in the project the patient and the staff moved together to the examination room. Then the flows were simplified so that the patient goes in to the examination room from the atrium where the doctor or nurse awaits them. This means that the patient flow is completely separated from the staff which is efficient for the staff that don't need to pick the patient up from a waiting room but can leave from the admin area straight to the meeting with the patient.

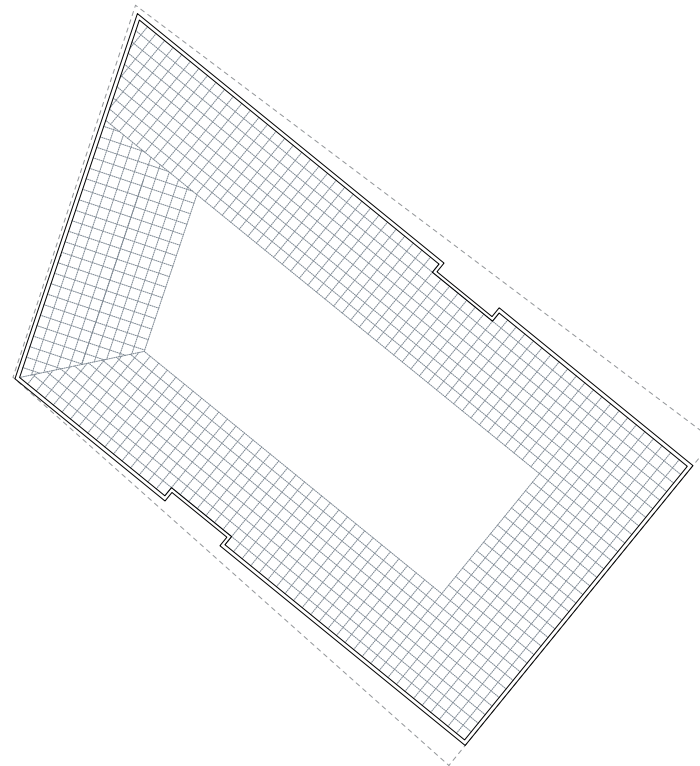
Our main concept is to separate the flows by architecture. Separating the flows lowers the risks for disease to spread. It also shortens the walking distances for staff every day. Since the examination rooms have two entrances there is always staff nearby that can help in case of emergency. Finally the separation gives the patient a sense of safety due to easy wayfinding and also by the meeting with the doctor taking place in a neutral zone that is not part of the administration area.

## ATRIUM

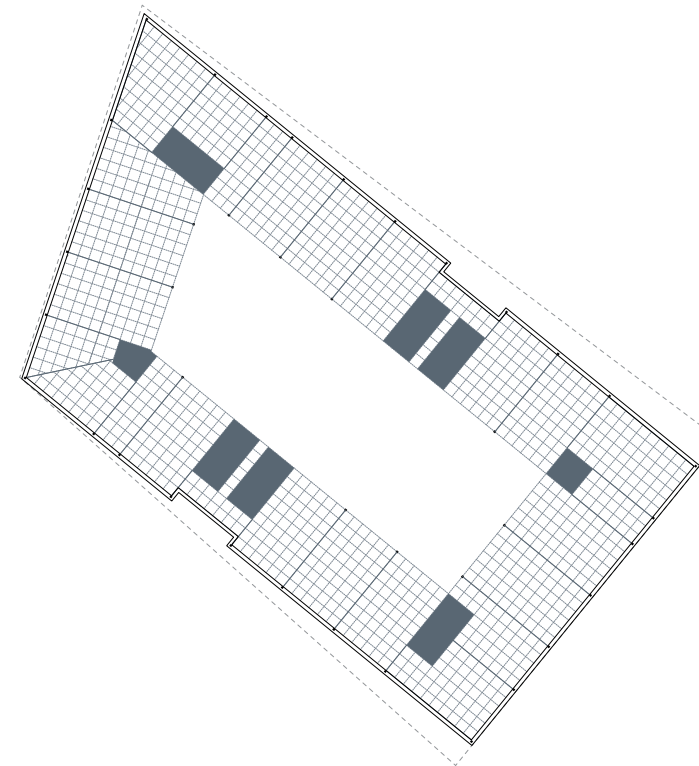


To create movement and sheltered places in the atrium the shape of the atrium varies between three different organic shapes.

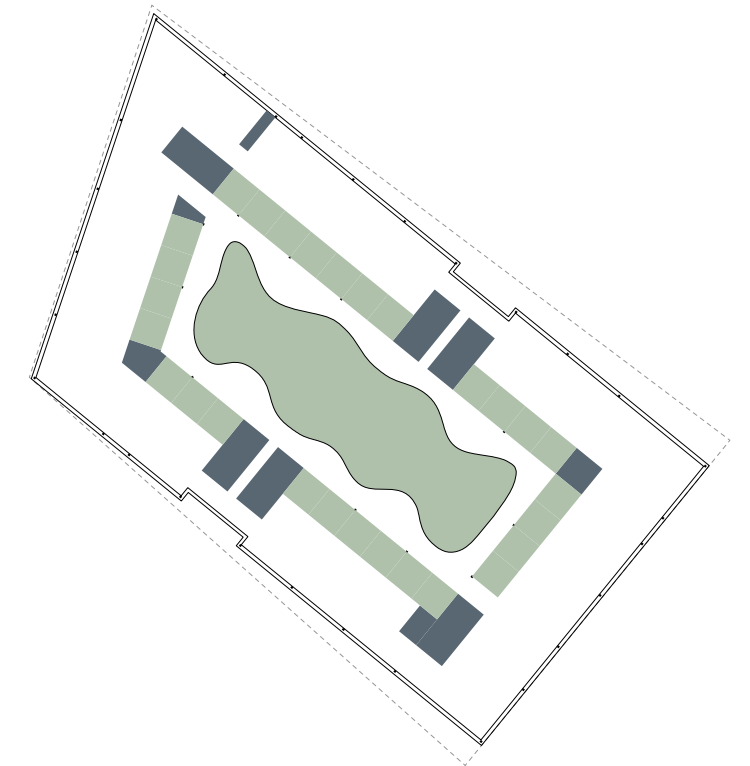
## STRUCTURE



All rooms in the hospital are based on a grid that have the measurement 1425 \* 1425. Following the grid gives spacious rooms of 17sqm and a wide corridors with possibilities for bed transports. It also gives a rhythm for the facade.



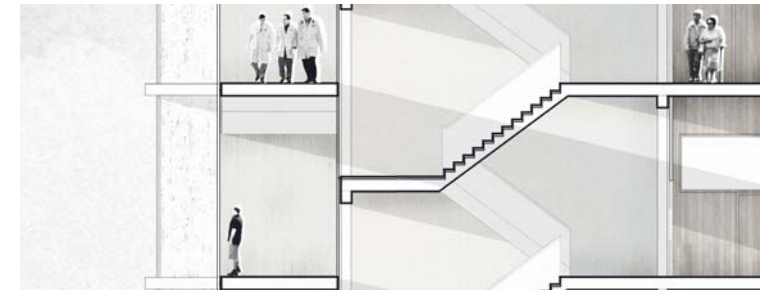
There are two main vertical communications for patients, staff and goods in the building. In addition, there are two more fire escapes and one elevator for medical emergencies.



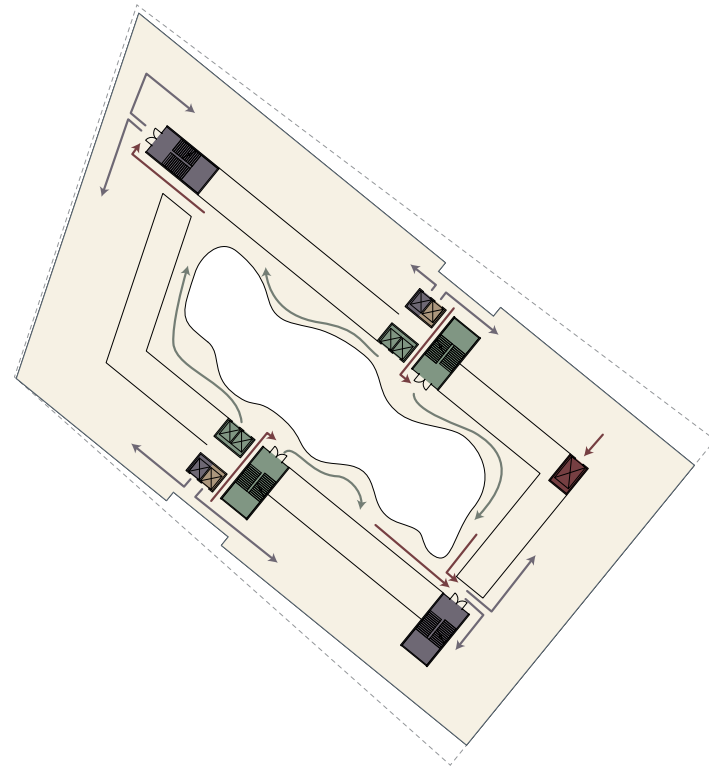
The examination rooms are all located around the hospital's atrium, where they are accessible for both patients and staff. There can be 28 examination rooms on each floor and 168 in total.

# VERTICAL FLOWS

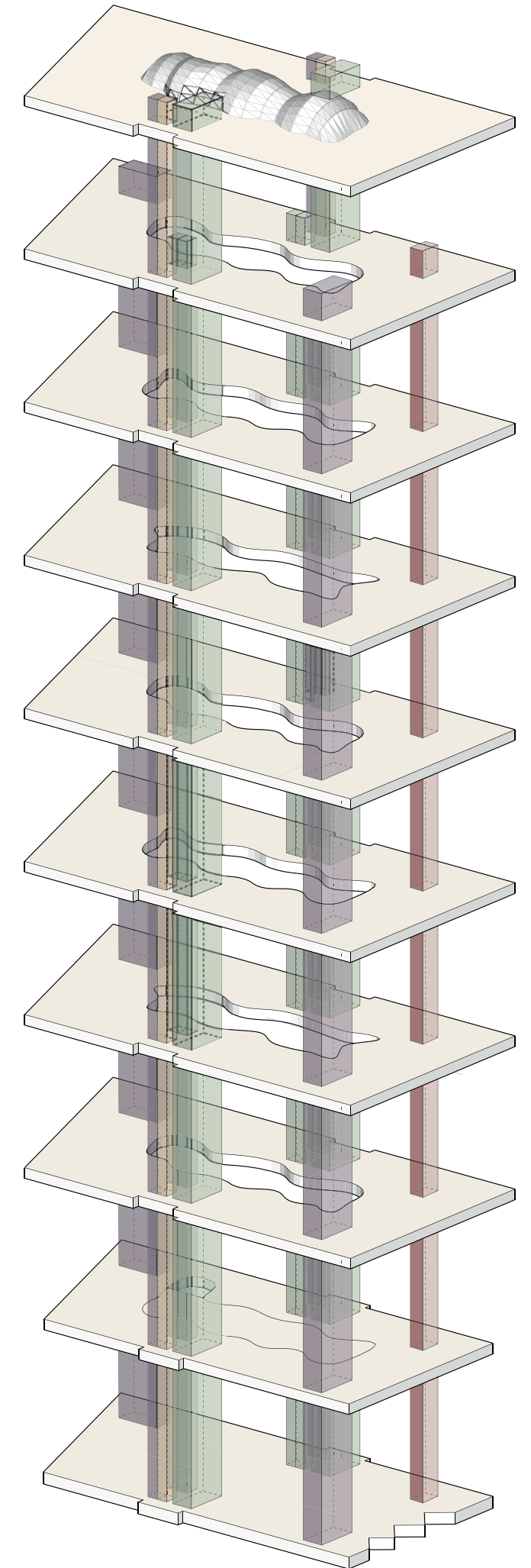
The vertical communication is spread out to two main communication spots where staff, goods and patients share a vertical flow. Still the flow is separated since the patients enter from the atrium and all other flows face that facade. The main communications are highlighted by openings in the facade that always makes the communication easy to see. All the vertical flows are separated with that staff and goods moving along the facade and with the patients in the atrium.



All staircases have glass walls that let light shine straight through. This also gives the user nice views while moving in the stairs.



PERSPECTIVE FROM BALCONY



# ENTRANCE FLOOR



## PATIENT

Frihamnens nearby hospital has a great position close to public transport and next to all communication to the city center. Therefore there is room for three public functions facing the busier streets towards north east and north west. Visitors get a first glimpse of the organic elements from the patient flow in the curved inner walls of the public functions.



## EMERGENCY

The ground floor contains the pickup for the ambulance in case of emergency at the hospital. It is placed inside the eastern corner of the building so that the ambulance can easily drive off again to the nearest emergency hospital.



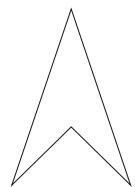
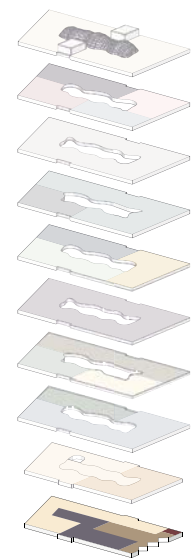
## GOODS

Three loading docks supply the hospital with all it needs and is placed on the eastern side so the trucks can unload into the building on the least busy street surrounding the hospital.



## STAFF

Staff arrives to the hospital from different directions and therefore they have entrances on two sides of the building. There is bicycle parking in front of all the staff entrances to make biking convenient for the staff.

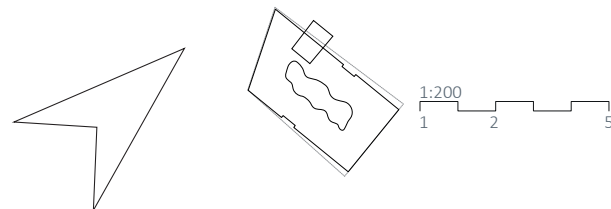
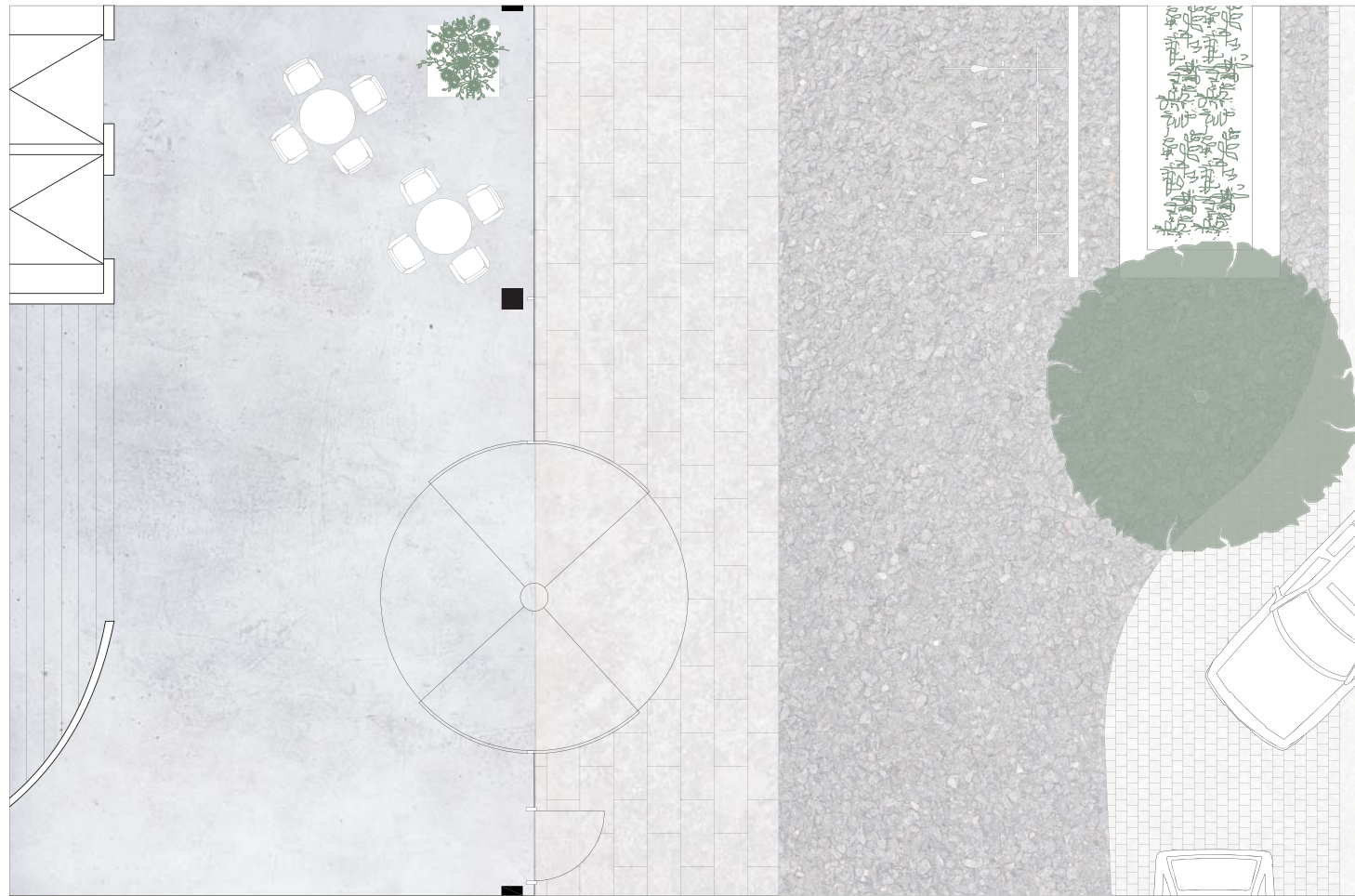


# ENTRANCE DETAIL

The main entrance is given its space by the pulled in facade and have a broad walking- and bike way passing it. Next to the entrance there is a taxi drop-off and inside the entrance patients can wait for taxi or bus overlooking the square.

The entrance is designed to suit an urban landscape, it is easy to find but still discrete so patients feel comfortable entering.

Once the patient has entered the building the clear wayfinding begins, the patient immediately sees both the staircase and the elevators leading up to the hospital. The staircase is placed right in front of the entrance to encourage patients to use them instead of the elevator up to the reception. The staircase is emphasized even more by the light from the atrium coming down over the stairs.



PERSPECTIVE OVER THE ENTRANCE

# RECEPTION FLOOR

The hospital begins at the second floor with primary care and the reception. This is where you discover and first experience the organic atrium of the building. When the patients come up the stairs they can see both the reception and the self-check in. At the same time they see the green islands that are spread out to form an interior garden. The garden contains space for exhibitions about health and medical research, a playground and room waiting and recovery. The greenery create a healing environment for the patient and provide nature all year around.

The reception and the self-check in are designed to give the patient privacy when they explain their errand to the hospital. The main reception is located in front of the staircase so that the staff can easily direct the patient to the vertical communication. All patients are given a room number upon arrival where they will meet their doctor.

There is room for public functions on the second floor, one café overlooking the square and a pharmacy that can attract more people to enter the hospital. The primary care follows the structure for outpatient care in the hospital.



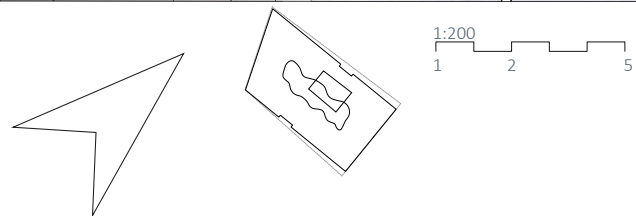
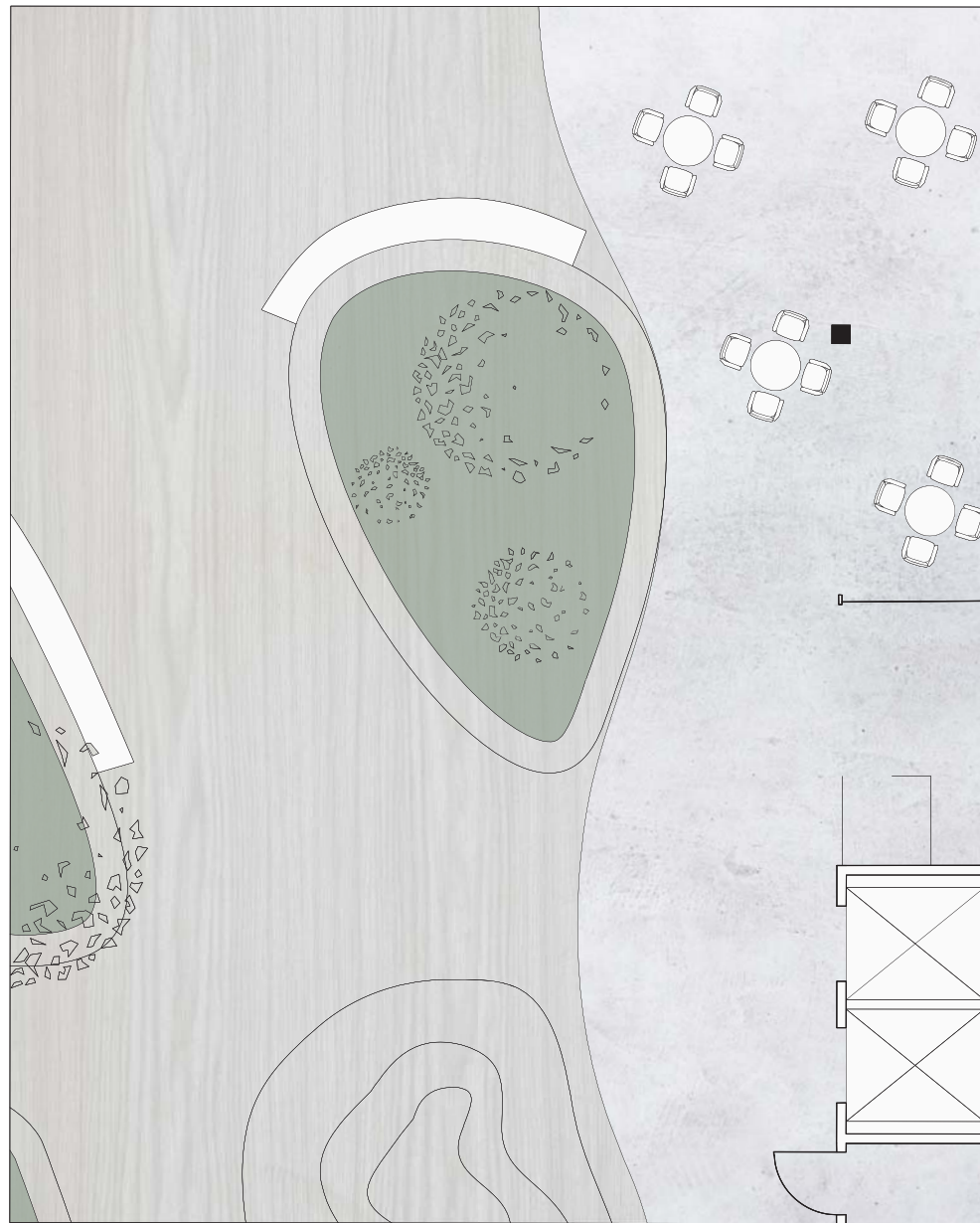
When entering the building can see the roof of the atrium that becomes a continuation of the organic shape. Wooden beam is the frame of the warm light coming down through the public area.



# RECEPTION DETAIL

Waiting is a part of all hospitals today and will continue to be so for some time, still there are some methods that could be used to avoid keeping patients waiting and therefore the hospital waiting area is designed to be a flexible space that can be used for exhibitions, an extension to the public functions or an indoor park where anyone can sit and enjoy the atmosphere.

When the patients arrives to the hospital they use the self check-in or go to the reception where they book an appointment or receive a room number to the examination- or meeting room where they meet their doctor or nurse. This creates a more efficient flow for the healthcare. The patient will receive a notice if the doctor is delayed, so that they can arrive to the hospital at the time of their appointment.



PERSPECTIVE FROM THE INDOOR GARDEN

# GENERAL PLAN

Once the patient has entered the hospital every department functions the same way. The patient enters the examination room from the atrium where they meet their doctor or nurse. If the treatment needs specialized equipment the doctor will bring the patient into the department for further treatment. All examination rooms are the same standardized size so that the departments can share rooms with each other to increase usage of the examination rooms.

The area behind the examination rooms consist of activity based workplaces with some set workplaces for administrative staff. Each floor have a common staff area with a pantry and large break room that can be used as a big meeting room.

The seperated flows gives a easy wayfinding for the patients and the staff never have to go far from their workplace to pick a patient up. Which saves time for the staff and gives the patient greater understanding of how the building functions. This reduces the stress patients often feel in hospitals.

The general plan has four places for rest along the organic balcony as well as toilets for patients in the northern corner.





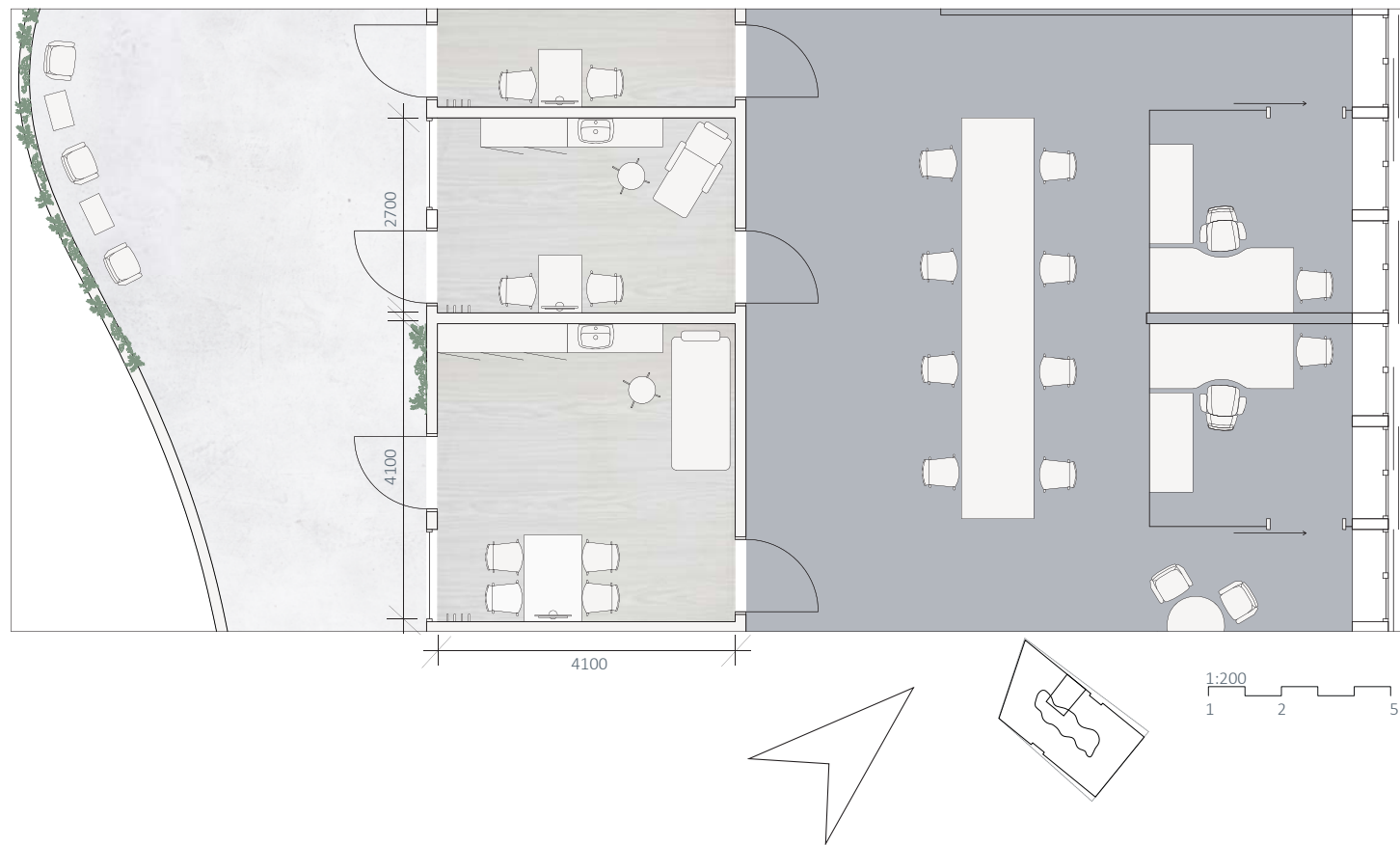
# DETAIL EXAMINATION ROOM

Wayfinding through the building is very clear and meant to let the patients find their way by themselves to make the hospital less intimidating. In the open space surrounding the atrium there is a secluded spaces for rest, recovery and waiting where the patient or relatives can enjoy the greenery of the atrium.

After moving through the atrium the patient enters the examination room. All examination rooms follow the grid and are spacious enough for relatives to come with you and to fit most treatments. The grid allows creating three conversation rooms or small examination rooms from two standard rooms where sampling or conversations can take place. The standard room is 17 sqm and the smaller version is 11 sqm.

To add more value to the healthcare the rooms have wooden ceilings, floors and furniture. Together with the green walls and the greenery seen in the atrium outside it gives the room a lot of warmth.

Daylight is brought into the rooms through two large windows towards the atrium. On the vertical eye height window the outside facade pattern is used to prevent people from seeing into the room but still let light through. This way each room gets a small facade of its own that emphasizes that the patient enters the hospital area. All examination rooms have a table that can fit relatives accommodating the patient to their meeting.



PERSPECTIVE EXAMINATION ROOM

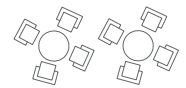
# DETAIL ADMINISTRATION

Currently hospital personnel spend a lot of time on administrative work, mostly in individual offices. Still it has been shown that these offices are only used 35% of a workday, to improve the usage of workspace in Frihamnens nearby hospital it will have activity based workplaces, which offers a variety of workplaces and an open environment that allows them to collaborate more.

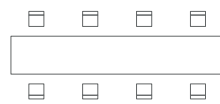
Each department will have a number of fixed workplaces for administrative personal and these places will be mixed in together with the rest of the staff. For doctors and nurses there will be some private workplaces, meeting rooms, sitting groups for reading and desks for work done on a laptop.

There will not be a clear division between the workplaces in different departments, this is meant to encourage the staff to collaborate and make sure that examination rooms assigned to different departments can be used by the other departments on the same floor. This way of organizing the staff and examination rooms allows the departments to shrink and grow depending on current needs.

## 17 FLEXIBLE WORKPLACES



Sitting groups for reading or short conversations.

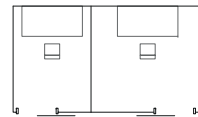


Desks for all types of work.

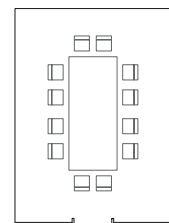


Tables where short work done on the move can be finished.

## 26 FOCUSED WORKPLACES



Cubicles for sensitive work and for the administrative staff.



Meeting rooms for department meeting or group work.

One floor with 28 examination rooms can be the workplace for 28 doctors, 28 nurses, 14 secretaries and head of departments. According to the report "Administrativa arbetsplatser-inom vården och dess förvaltningar" 40% of workplaces should be for focused work. We estimate that we need workplaces for 50% of the staff and that they are mixed between fixed and flexible. The area allows us to plan for more workplaces than needed and therefore have the possibility of focusing on research and future needs.

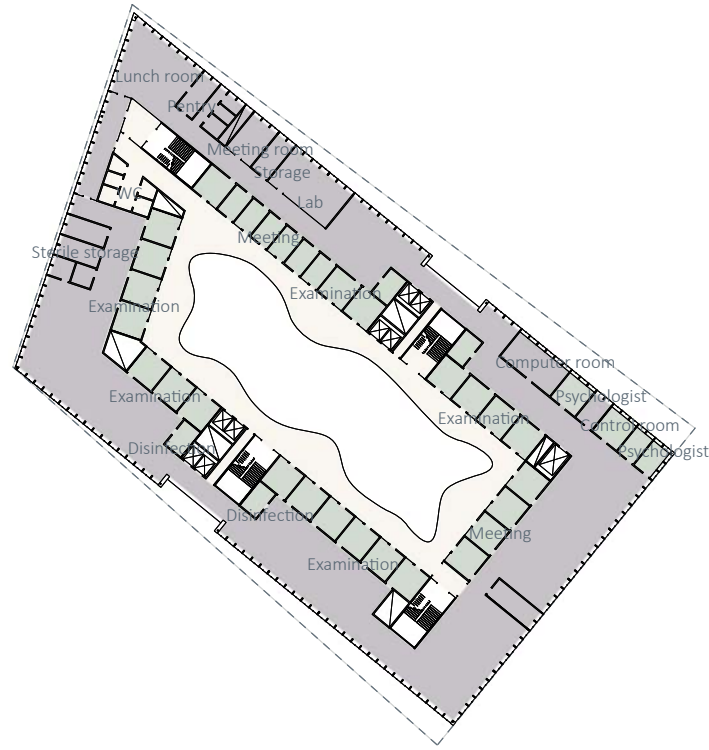


PERSPECTIVE ADMINISTRATION AREA

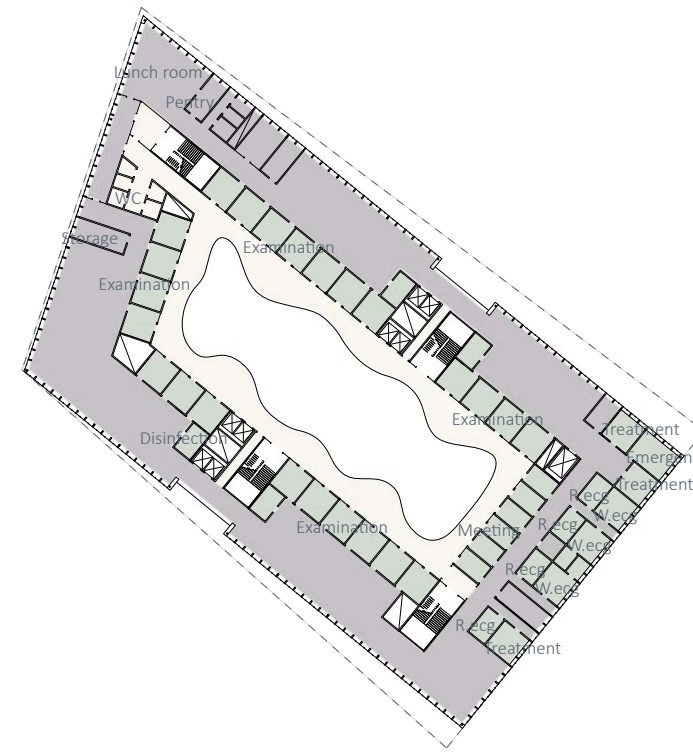
# GENERAL FLOORS

Floorplan four, five, six and nine are all outpatient departments that follow the general structure of the hospital. The differences between the floors is the specialized treatmentrooms specific for each department. For example rooms for working ecg in the adult specialist center or x-ray in imaging.

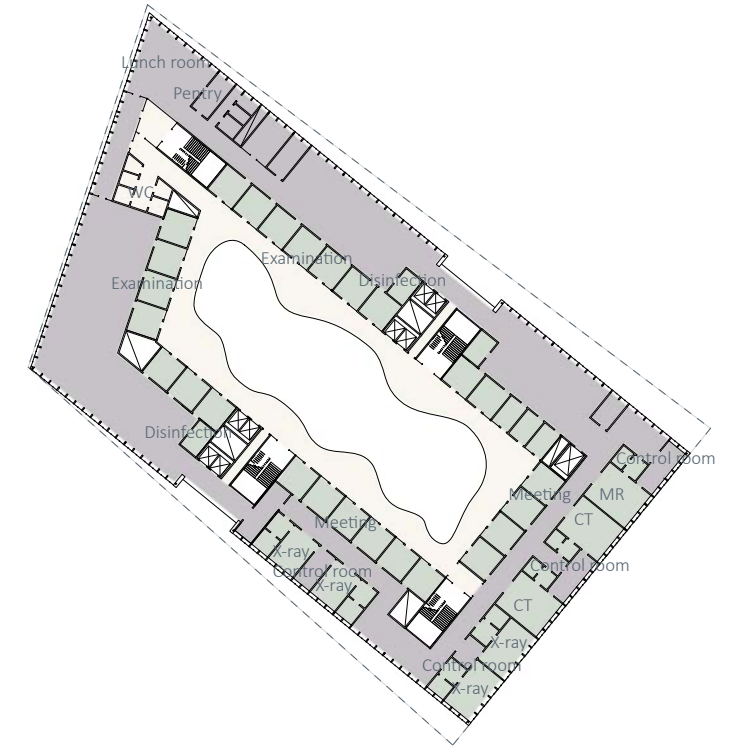
**FLOOR 4**  
Ear, nose throat, gynecology and pain center



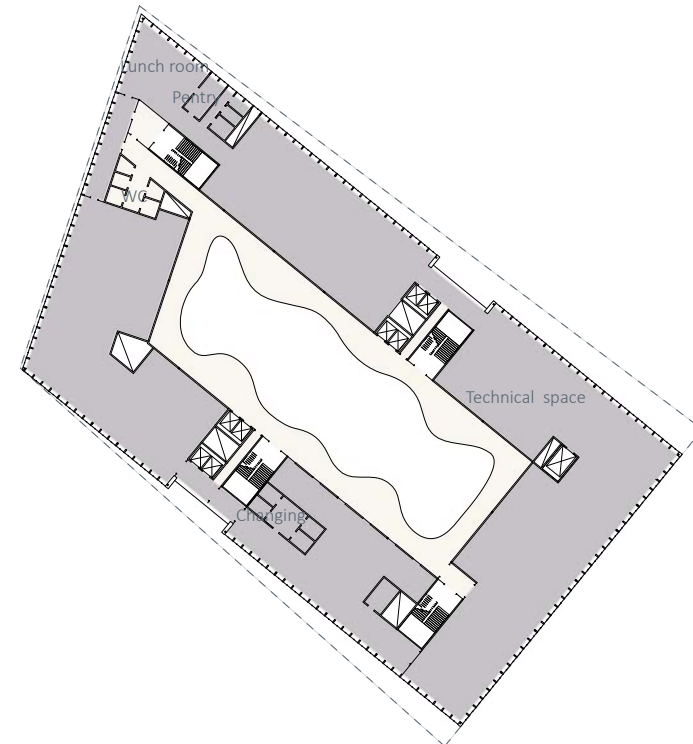
**FLOOR 5**  
Adult specialist center



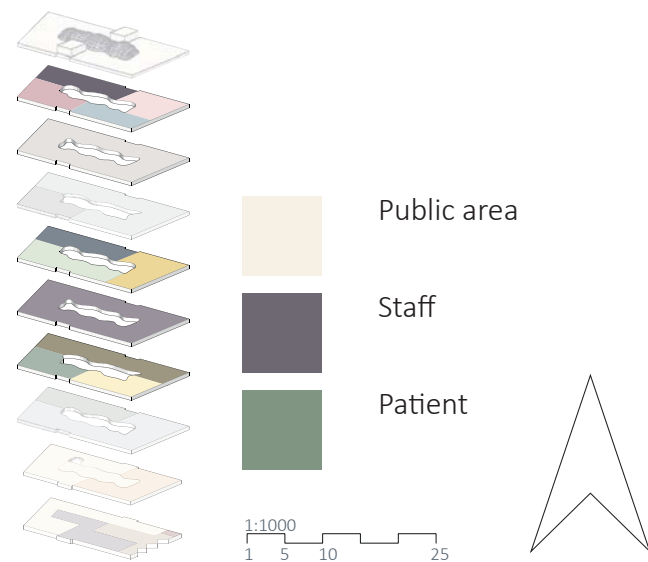
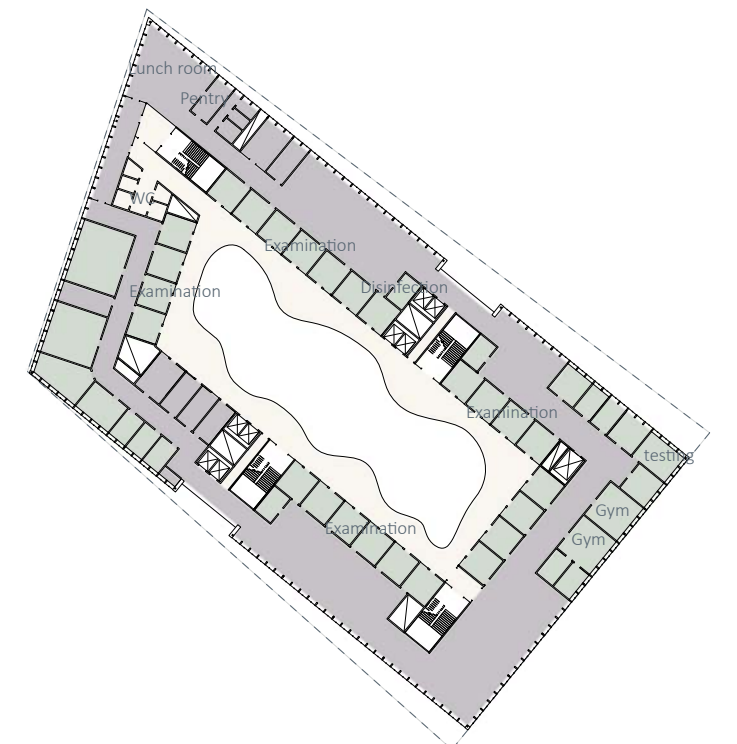
**FLOOR 6**  
Imaging, Endoscopy and Orthopedics



**FLOOR 8**  
Technical floor and staff area for surgery



**FLOOR 9**  
Dialysis, Heabilitation and Public psychiatric care



# SURGERY

On the seventh floor surgery and daycare is located. Here they have a close connection to imaging on the sixth floor and is separated from the larger patient flows on the floors below.

Surgery have a different room structure from the out patients departments and require larger rooms, a clean zone and rooms where patients can recover after surgery. To keep the effective flow from the other floors the patients enter the surgery department through a meeting room.

After meeting their doctor or nurse the patient will be brought into preparation for surgery. The flow continues around the atrium when the patient is brought to the operating theatre. The clean zone begins by the vertical communication and ends by the opposite communication.

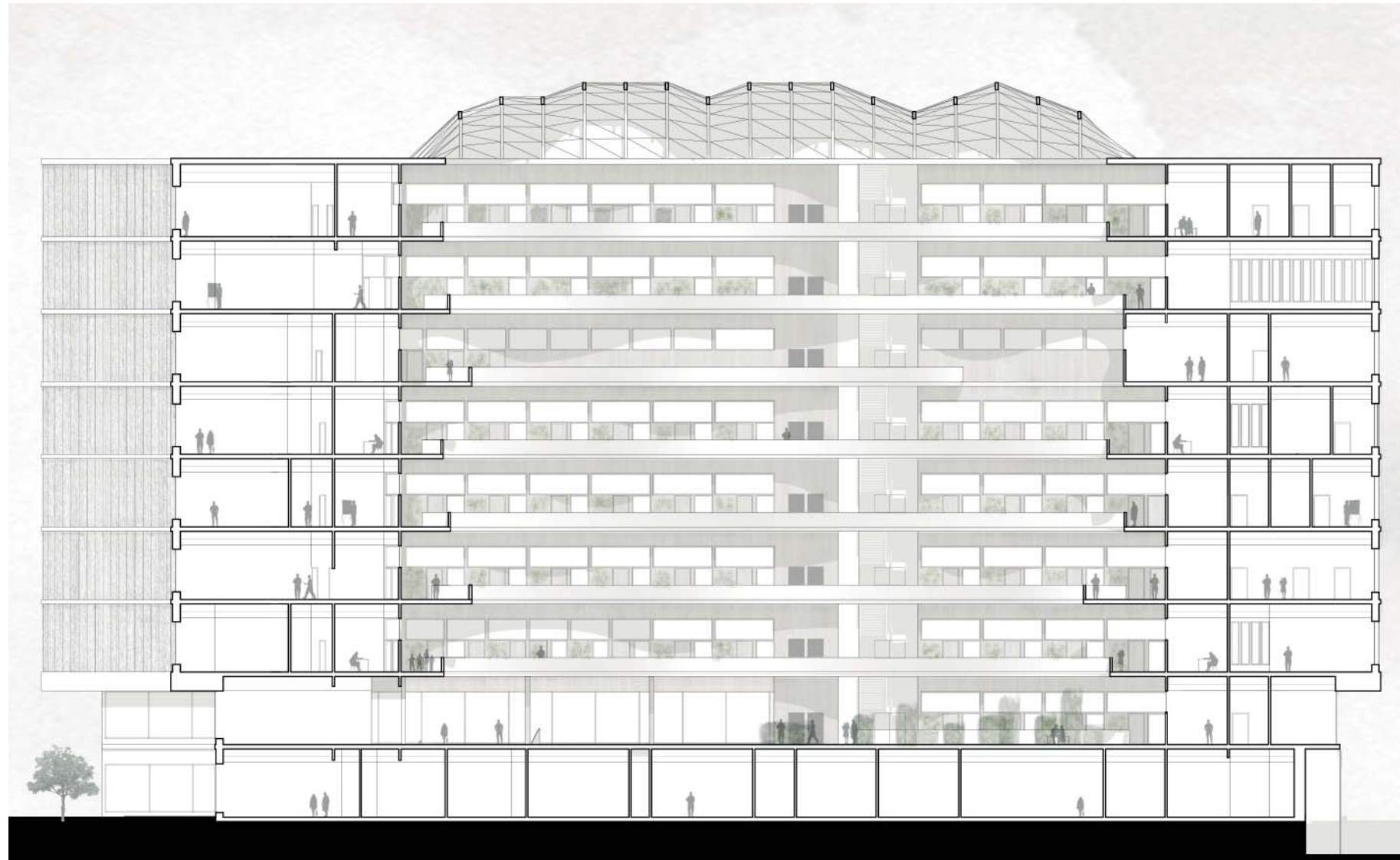
All operation theaters have windows to allow daylight in during surgery because of the longer amount of time spent in the room for both patient and staff.

After surgery the patients will be brought back to pre/post operation or to the daycare department for observation.

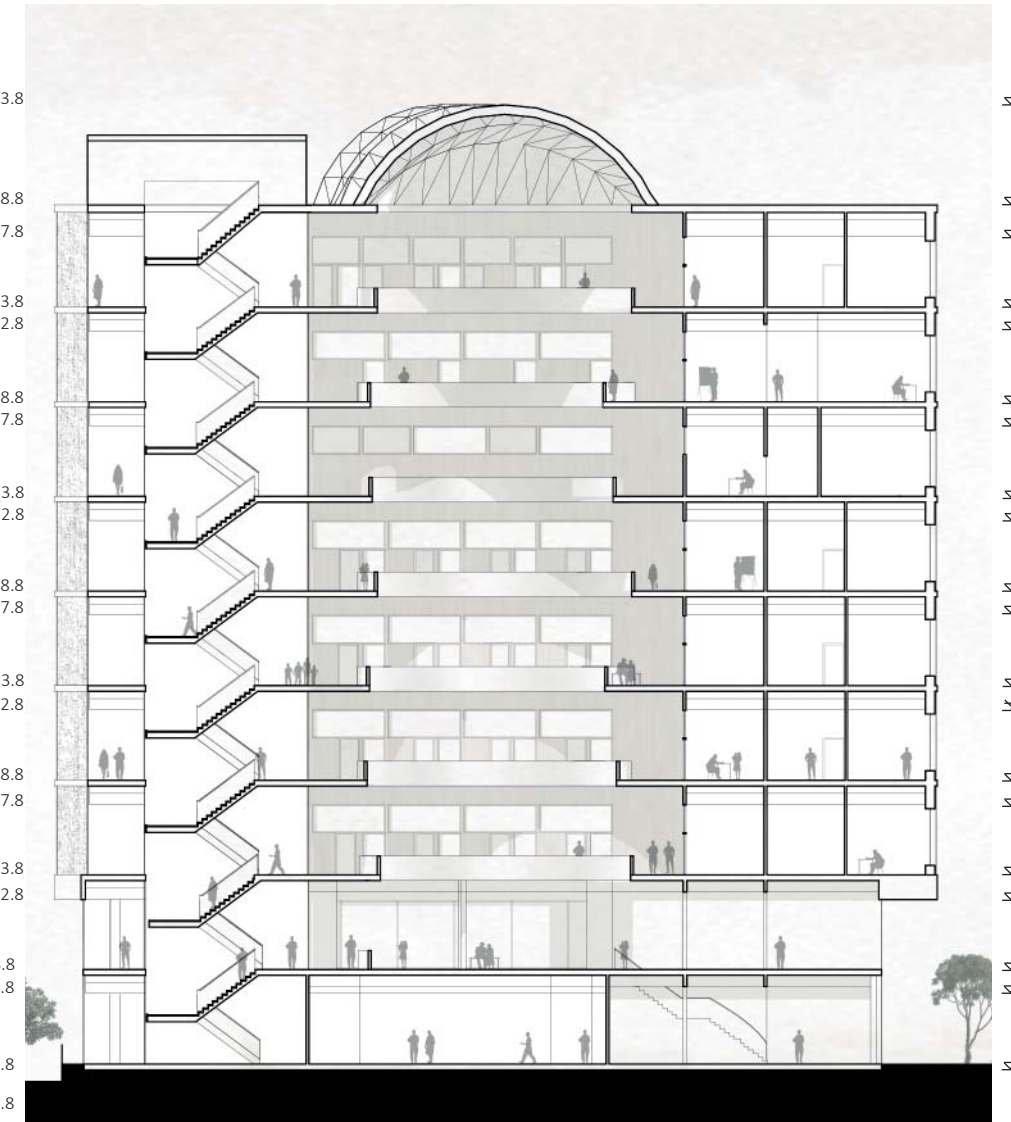
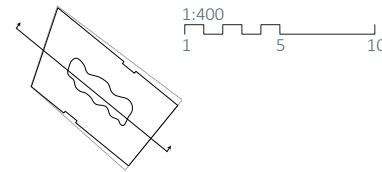
The staff flow starts on the 8th floor where the staff have their changing rooms, after changing they have a clean staircase that brings them straight into the clean zone where surgeries take place. When the staff are meeting the patient or working in daycare they use the normal vertical communication.



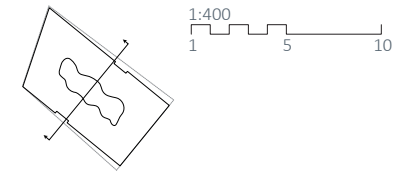
# SECTIONS



SECTION A



SECTION B

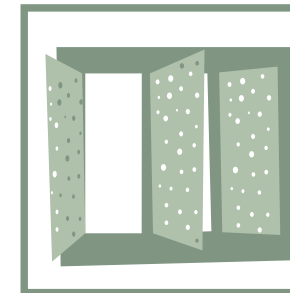


# SUSTAINABILITY

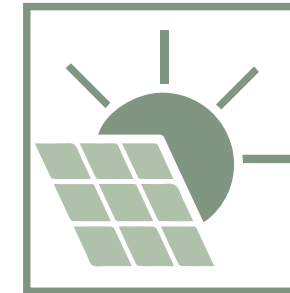
Hospitals generally have a large impact on the environment. There are a lot of chemicals and other waste in a hospital, so when designing a new hospital it is important to think of how its impact on the environment can be reduced. In Frihamnen nearby hospital the environmental focus is to save energy by preventing overheating, using solar power and natural ventilation, having a green roof and flexibility.



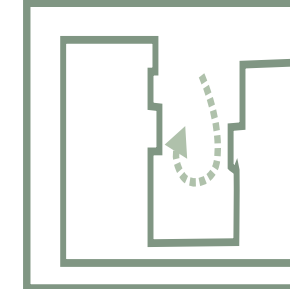
PERSPECTIVE ROOFTOP GARDEN



To prevent the building from getting over heated the facade is designed to work as a sun shade. The screens can be varied so that they cover from 50 % of the facade up to 100 % during the sunniest part of the day. Using the shades will not only keep a good thermal climate in the hospital, it will also show people passing by when the hospital is being used by the variation in the openness of the shades.



Frihamnen nearby hospital covers a large plot and have no buildings shadowing it from the sun, so part of the roof will be covered by solar panels to supply the hospital with renewable energy.



Natural ventilation can be difficult to use in a hospital but in Frihamnen natural ventilation will be used in the atrium where there will be a stacking effect to ventilate the public functions and the waiting area.



The biggest risk when building a new district in Frihamnen is the raising sea level and risk for flooding. To deal with large volumes of water falling half of the hospitals roof is a garden.



It is very important to include flexibility into sustainability. Healthcare is constantly changing and new hospitals will have to adapt. By following a grid and having generous rooms Frihamnens near by hospital can be adapted to fit the future needs. The way the patient flow and staff flow is separated also allows healthcare to develop into self treatment. All floors have a 5 meter height so that any department can have surgery in the future.