

Pulse

Report

ARK263 Future visions for healthcare, housing and work 3:

Healthcare architecture

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2021-12-20

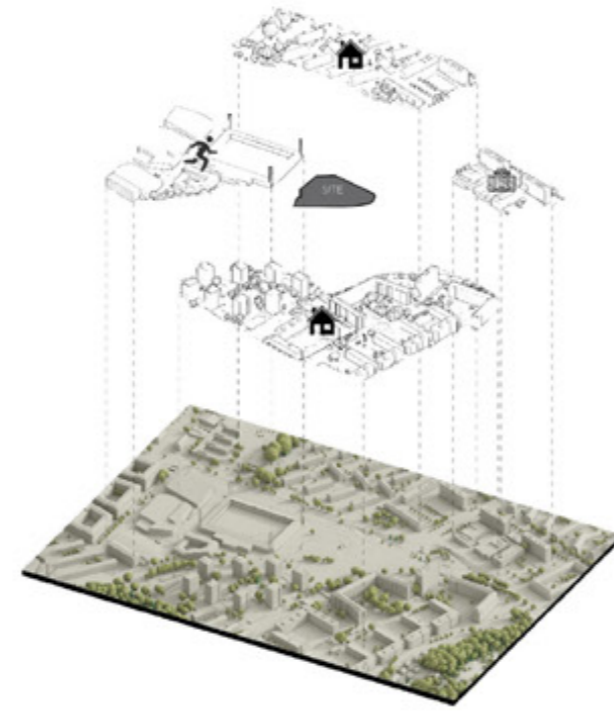


THE TASK & SITE ANALYSIS

The task this year is to design a new community hospital situated at Wieselgrensplatsen in Gothenburg. The project client is Västra Götaland Region through Västfastigheter. The hospital should include a combination of units including primary care, specialist clinics, imaging and surgery as well as other healthcare facilities.

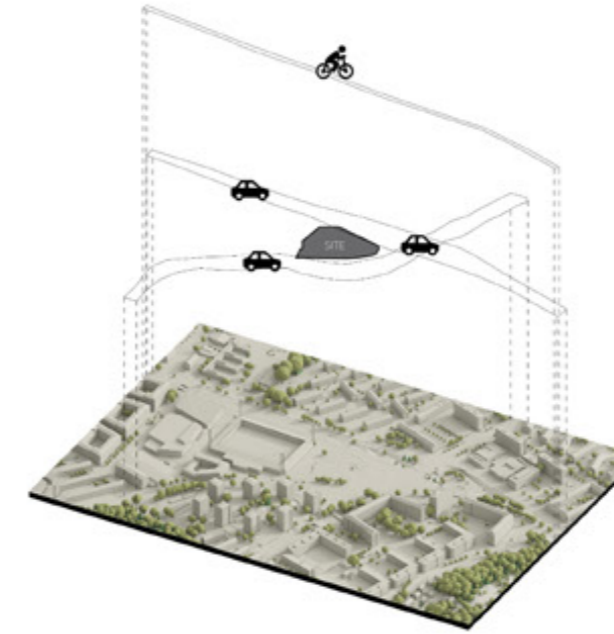
The aim is to take into account the area's ongoing development and collaborating with the city planning office and other stakeholders, to create a hospital that supports close, safe and professional care for the patients living in the area. As well as designing an attractive environment for staff and for the people visiting the site.

At the moment the site consists of a McDonalds, a gas station and a parking garage. The 24h open McDonalds contributes to the overall safety in the area at the moment. There's an ongoing development of a new ice rink, swimming pools, housing and a parking garage. A parking garage, also known as the mobility hub needs to be included in this project.



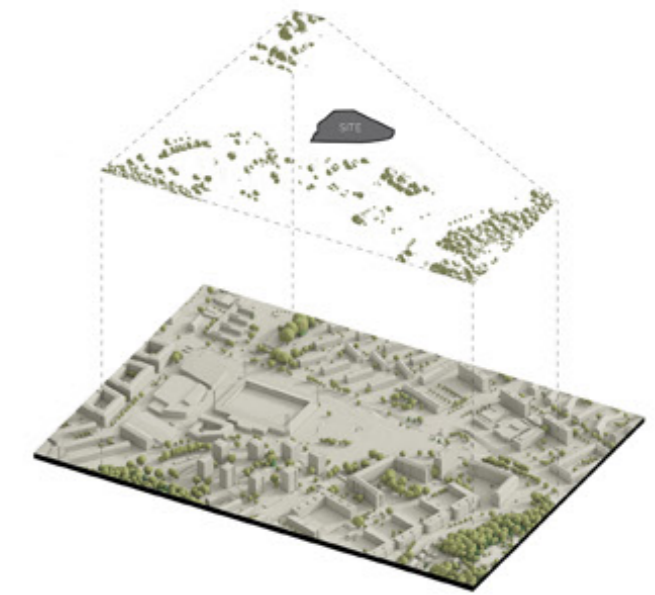
NEIGHBORHOOD

The site is surrounded by different typologies and functions. Residential housing appears in different sizes and shapes in the area. Next to the plot there is a football arena and next to that an ice rink as well as a public swimming pool.



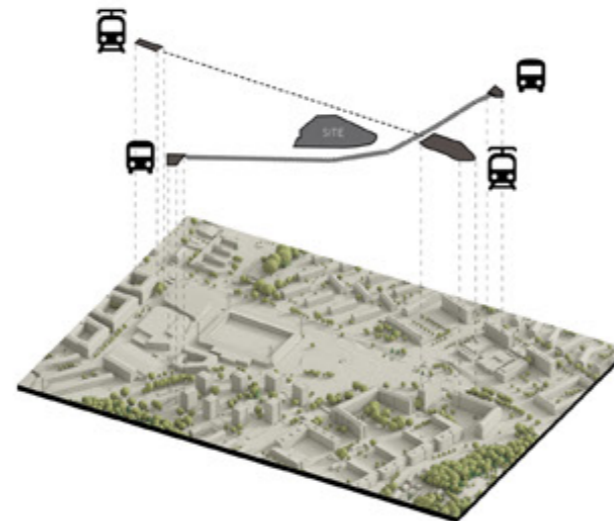
TRAFFIC

The traffic is very apparent around the site. A lot of heavy traffic and visible asphalt landscapes overpower the surroundings.



GREENERY

There are some green areas around the site and it is close to bigger recreational areas like Ramberget. However all the greenery gets concealed by all the grey, hard surfaces. It is more of an industrial feeling to the area, rather than nature-like.



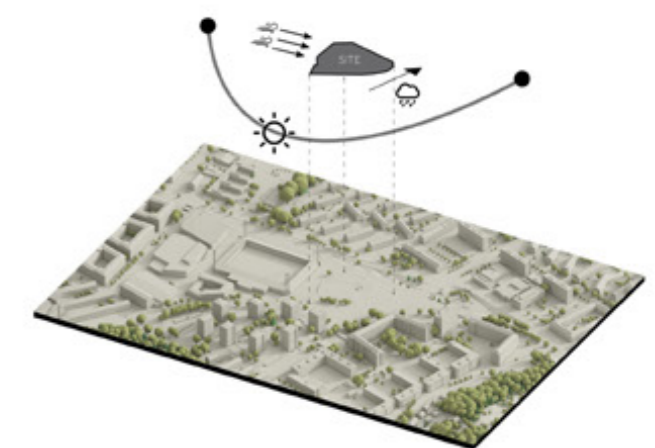
PUBLIC TRANSPORTATION

The site is located close to the tramstop Wieselgrensplatsen, which have good connections to the rest of the city. Busses also passes through the site on Inlandsgatan. This makes this site well located and a good placement for a hospital.



PEDESTRIAN FLOW

The different activities taking place in the area with the arena, ice rink, baths and the multitude of residentials creates a lot of movement around and through the site.



WEATHER ORIENTATION

The site allows good sun exposure throughout the day. It is potentially exposed to flooding if there would be heavy rain, which would need to be taking into consideration.



DESIGN STRATEGIES

This project takes its departure in a few design strategies, considering different important aspects of the overall hospitals design. They are divided in four categories; Brief and logistics, Site context, Sustainability and futureproofing and Health promotion.

The aim is to create a hospital that is based on the megatrends happening in today's society, today and in the future. As well as using evidenced proofed design strategies that will create a good environment for both patients and staff. But to also contribute to the overall development of the area, to make the best of the site for residents and visitors.



This project is based on the idea that the pandemic has had its consequences for healthcare in the upcoming future. That there will be an increase of common diseases and longer waiting lines because of the implemented safety measures. There's also clear trends of a growing elderly population, digitalisation and climate change.



Taking this into account, the project is set to increase screening and preventative care. Expand the mobile team and primary care resources for example, as well as designing for extreme weather conditions.



COMBINE SPACES

- Share common spaces as waiting area for patients, and lunch room for staff.
- Combine admin spaces within each unit to make more efficient plans.
- Combine certain large functions as the gymhall to share between units.



SAFETY

- Adding residential units to make the site more used during all hours of the day, as well as adding day- and nighttime functions as a kiosk and gym.
- Relate to the human scale as much as possible.
- Separating pedestrians from heavy traffic.



RESILIENCE

- Delaying precipitation with green areas on roof and ground.
- Separation of flows to minimise spread
- Flexible floorplans to make easy adaptations in the future



PEOPLE CENTRED DESIGN

- Separation of flows, making it easy for people to navigate themselves without the help of others.
- Making the large volume as adapted to the human scale as much as possible, by trying to breaking up the volume and facade.
- Have patient rooms where the patients can be more in charge of their care. Making the rooms more pleasant and less sterile.



DIGITALISE VS. HUMANISE

- Adding more digital solutions as a self check-in, but at the same not removing any human interaction by keeping a main reception in the ground floor.
- Adding a more digitalised self examination area where patients can digitally do their own check-ups.



CONCENTRATE FLOWS INWARDS

- Separating pedestrians from heavy vehicle traffic.
- Framing the public square to create safety and concentrating the flows and movements.



BIOPHILIC DESIGN

- Exterior green spaces.
- Green facade material.
- Green interior spaces.
- Sufficient daylight in the public functions where patients spend the most time, and in the administrative areas for staff.



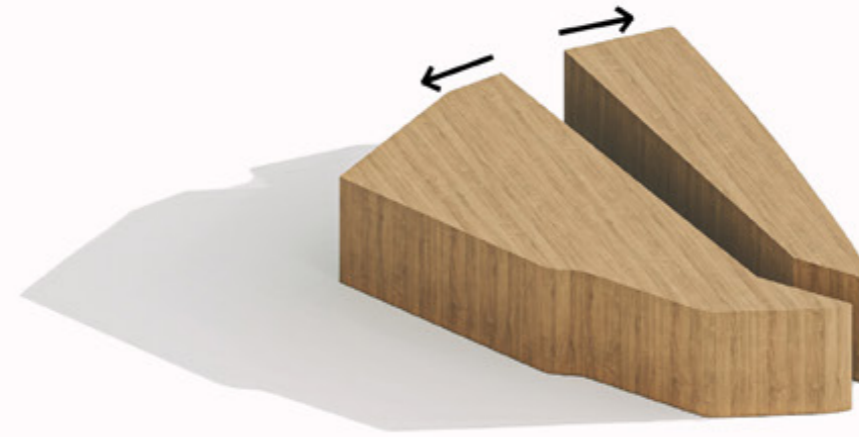
NUDGING

- Make it easier to locate the main stair, rather than the elevators, to promote active movements.
- Adding a gym in the ground floor
- Active outdoor plaza

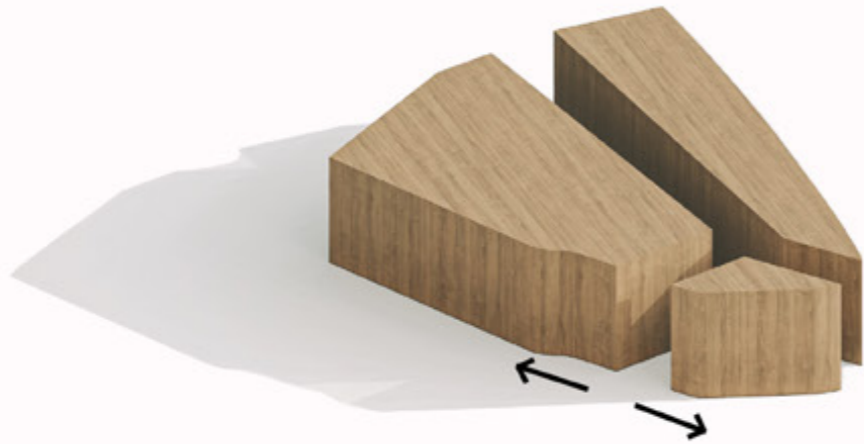
CONCEPT DESIGN



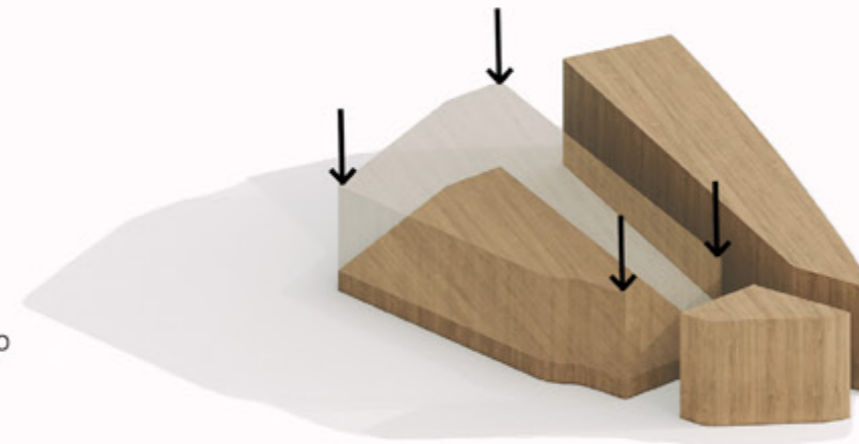
- 1 .
The total building volume on site.
The site is 9000 square meters.



- 2 .
Opening up a passway through the site, from Wieselgrensplatsen to Hjalmar Brantingsgatan in north-west for pedestrians.



- 3 .
Adding a connection for cars and logistics in the south, towards Inlandsgatan, where pedestrians also can pass through the site.



- 4 .
Moving down the south-west block two floors into the ground to minimise sunshading in the centre of the site.



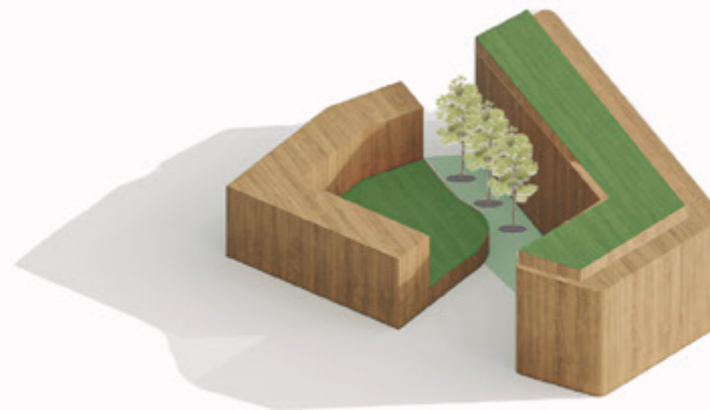
- 5 .
Combining two of the volumes to create one L-shaped building. Together they are framing a central plaza on the site.



- 6 .
Residential units are added to increase the safety on the site. This frames the plaza even more.



- 7 .
Offsetting the top- and ground floor of the L-shape volume to break the scale down a bit, making it more related to the human scale and making it more comfortable to walk next to.

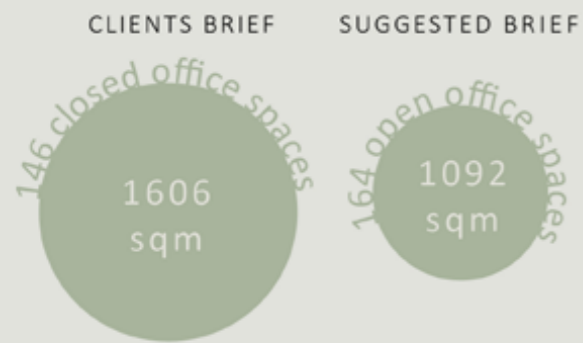


- 8 .
Adding greenery to the exterior to make the site more inviting and to delay precipitation.

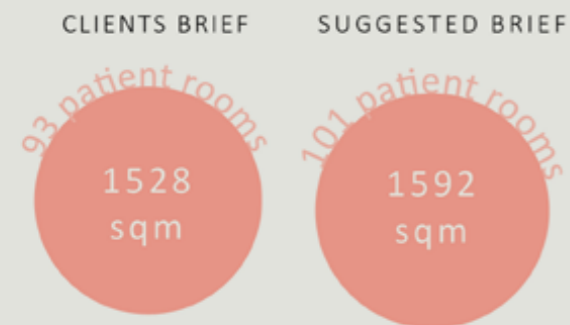
CHALLENGING THE BRIEF

The client provided a brief which stated all necessary rooms and their sizes. This brief was based on a traditional hospital layout with individual offices for all employees, single, shared, corridors for both staff and patients etc. With the help of the design strategies this project has challenged the given brief and adapted it. A lot of areas are made more efficient, and some functions are moved out from each unit and combined to be shared across the whole hospital.

One approach was to turn closed offices, into more open office landscapes, allowing more space for common staff areas and making the plans more efficient.

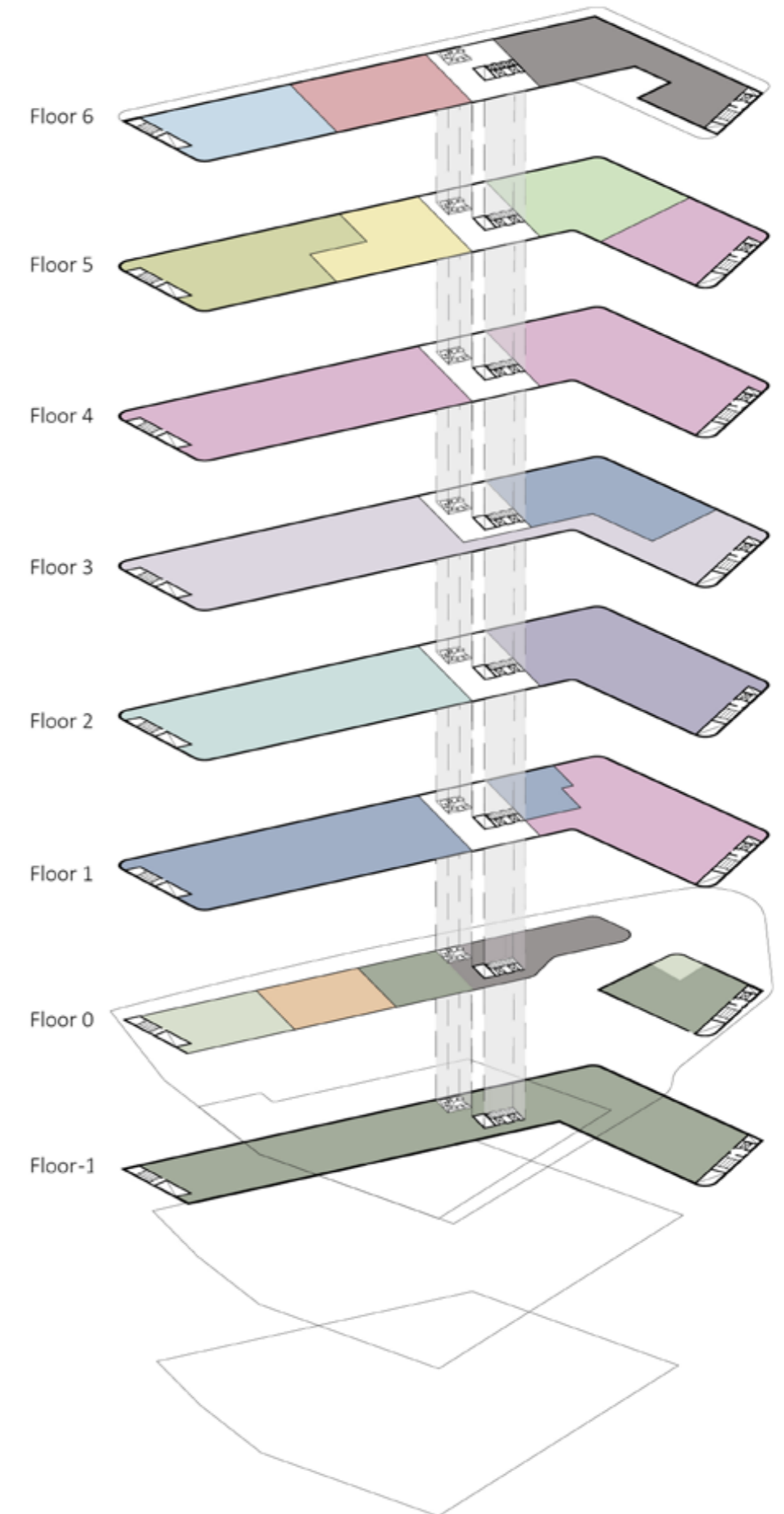
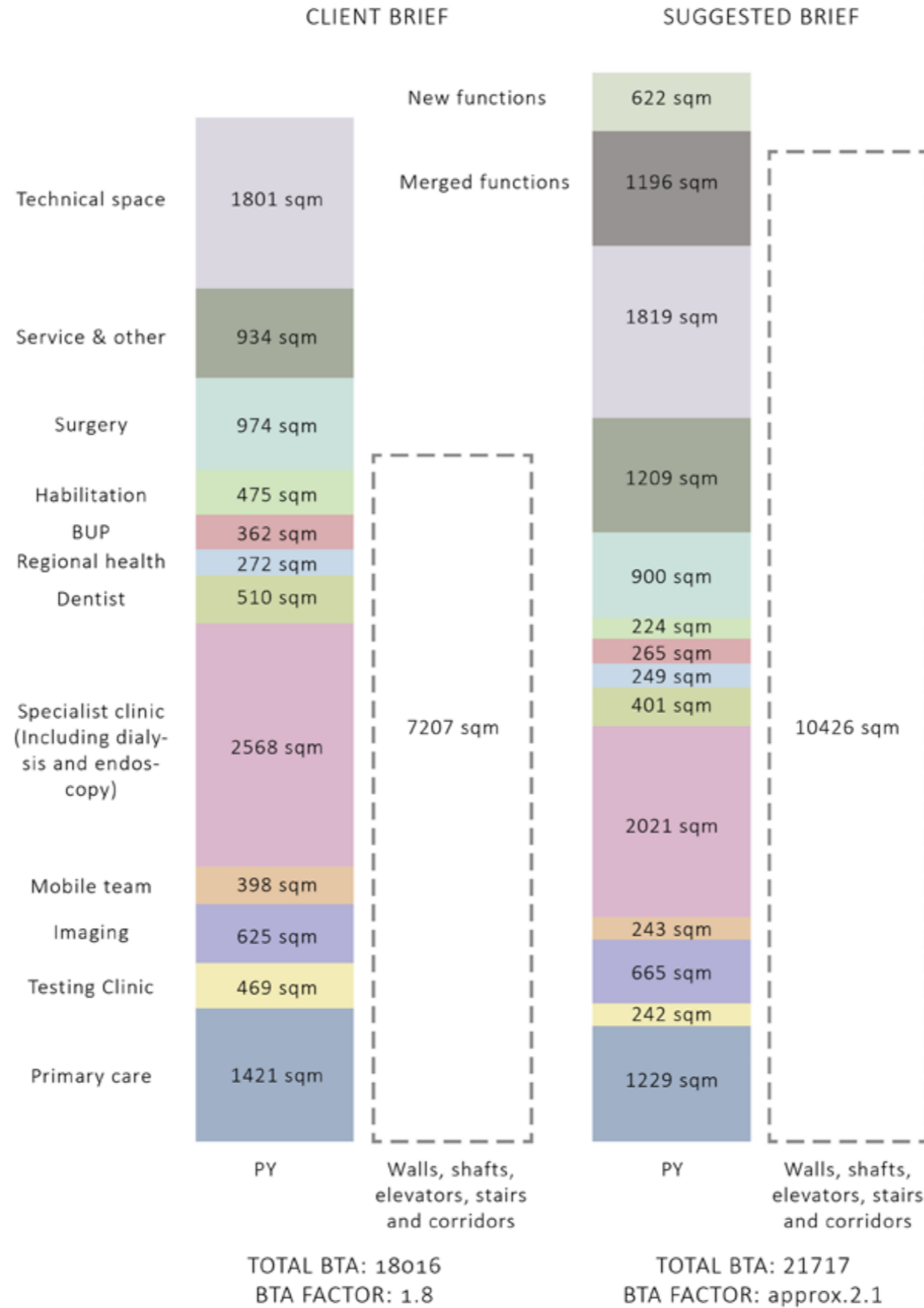


The same amount of square meters is used for total amount of patient rooms, but by combining some of the dialysis patient rooms into one large one for example, it was possible to make the spaces more efficient. Each patient room have the same size as in the brief.



- New functions include:
- Gym
 - Kiosk
 - Self examination area for patients

- Merged functions include:
- Common waiting area
 - Common reception
 - Common staff area

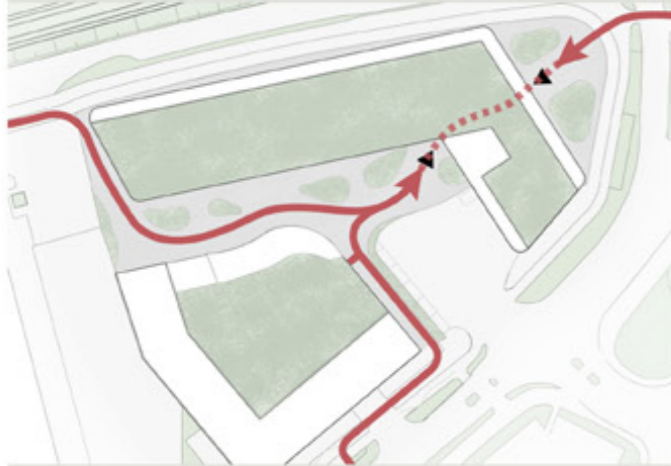


SITEPLAN

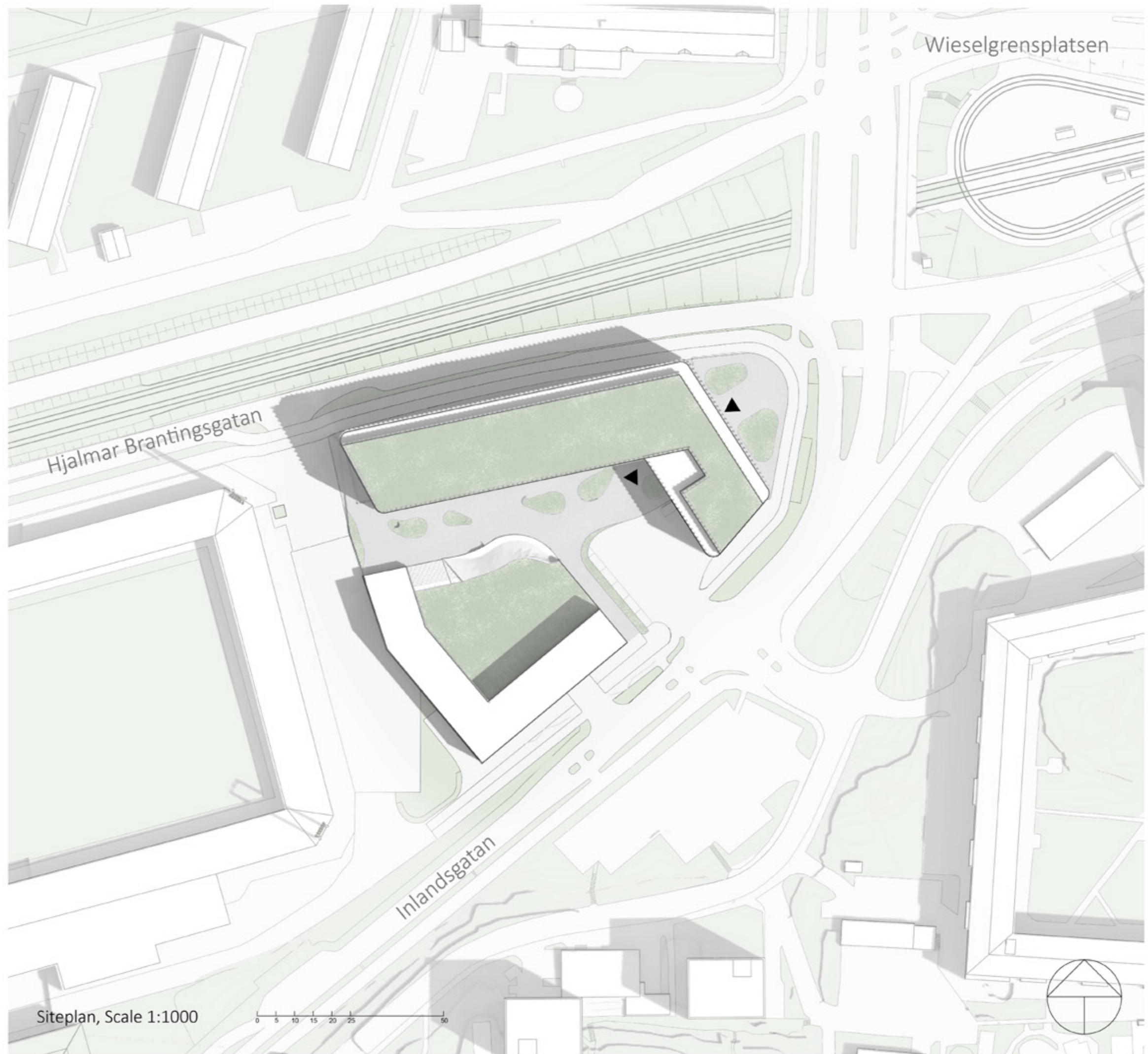
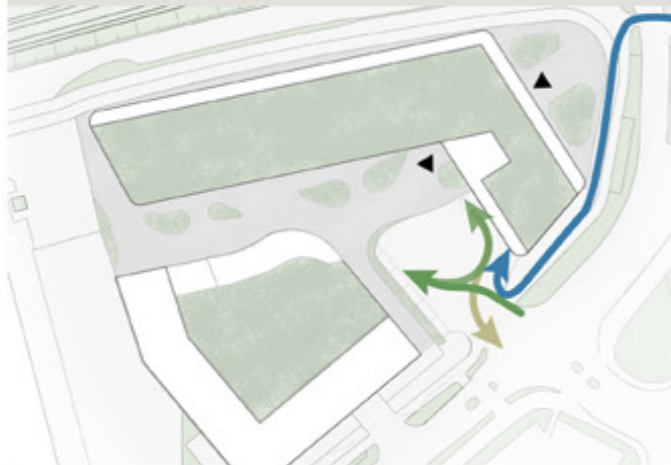
The hospital stretches towards Hjalmar Brantingsgatan and the Wieselgrensplatsen. An opening in the ground floor from Wieselgrensplatsen directs people to the middle of the site, which is a plaza being framed by the hospital

Apart from the hospital, the site also accommodates the mobility hub which is a bike and car park for visitors to the whole area. On top of the mobility hub, there is an addition of residential units, which makes the plot more active during more hours of the day. It will also help to finance the project. These residential units have easy access to the green spaces on top of the rest of the mobility hub.

Flows for patients



Flows for goods, waste and staff



Siteplan, Scale 1:1000

GROUND FLOOR & PLAZA

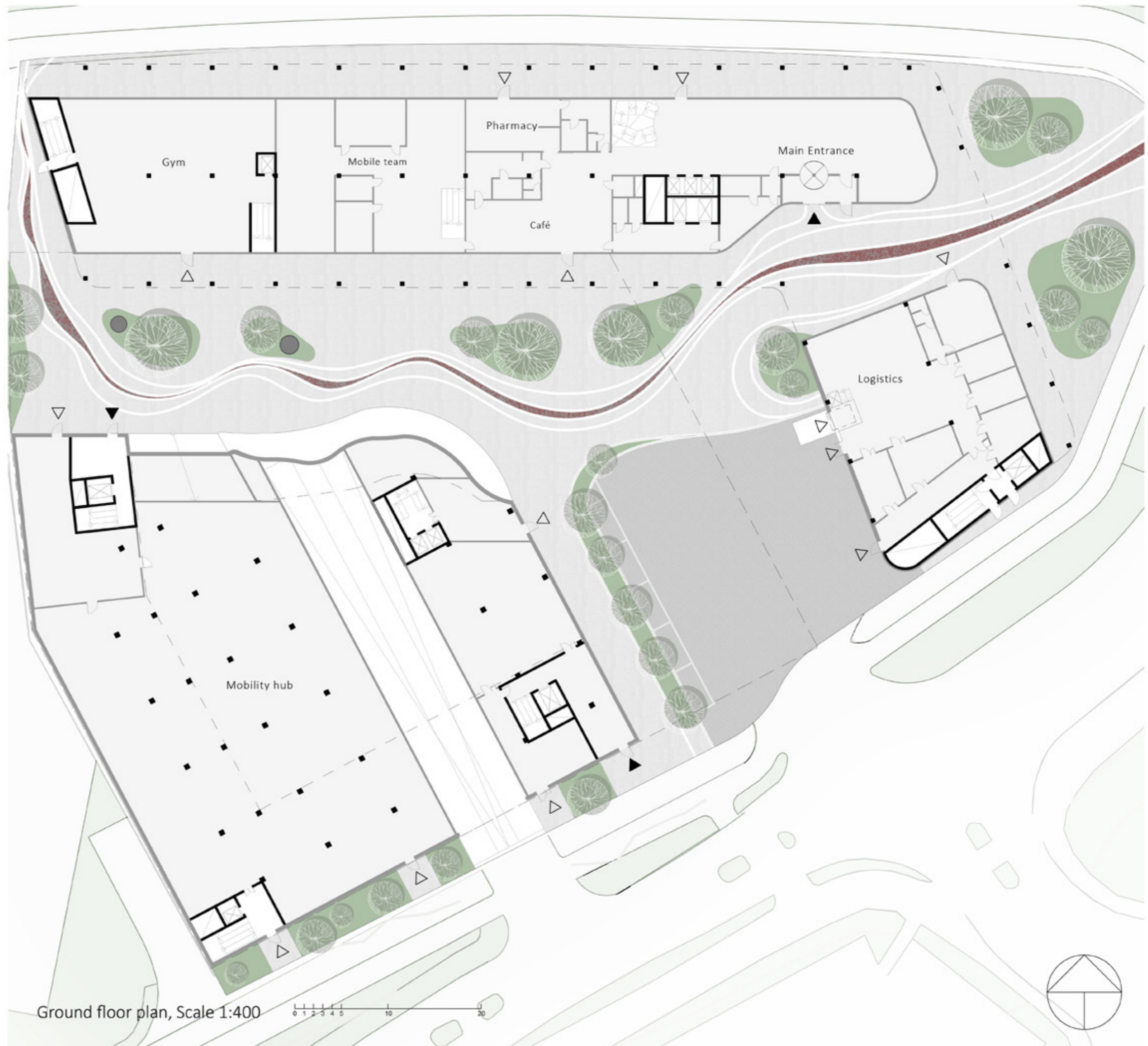
The public space that is being framed by the hospital and mobility hub is supposed to act like a safe and attractive space for people visiting and living in the area.

To make people pass through the plaza, and not around the site, the plaza has been of huge importance in this project. It has been divided into a more calm zone where the café is located and then a more active zone outside of the gym. Here you can find a climbing wall going up to the mobility hub and small jumping pads for children to play at.

A linear pattern is pulsating across the site, guiding the visitor to the entrance of the hospital and how to move through the site. Inbetween these patterns there are different ground material, some to encourage children to jump and play by having interactive patterns.

The reason for this plaza is to make it a safe place when passing through. The plaza doesn't only act as a safe environment by concentrating people towards the middle and ensure movement of people throughout the day. The plaza is also intentionally distanced from car traffic, making it feel like a more safe space.

The residential units on top of the mobility hub also acts a safety measure, making sure people pass and watch the site during all hours of the day.



GROUND FLOOR



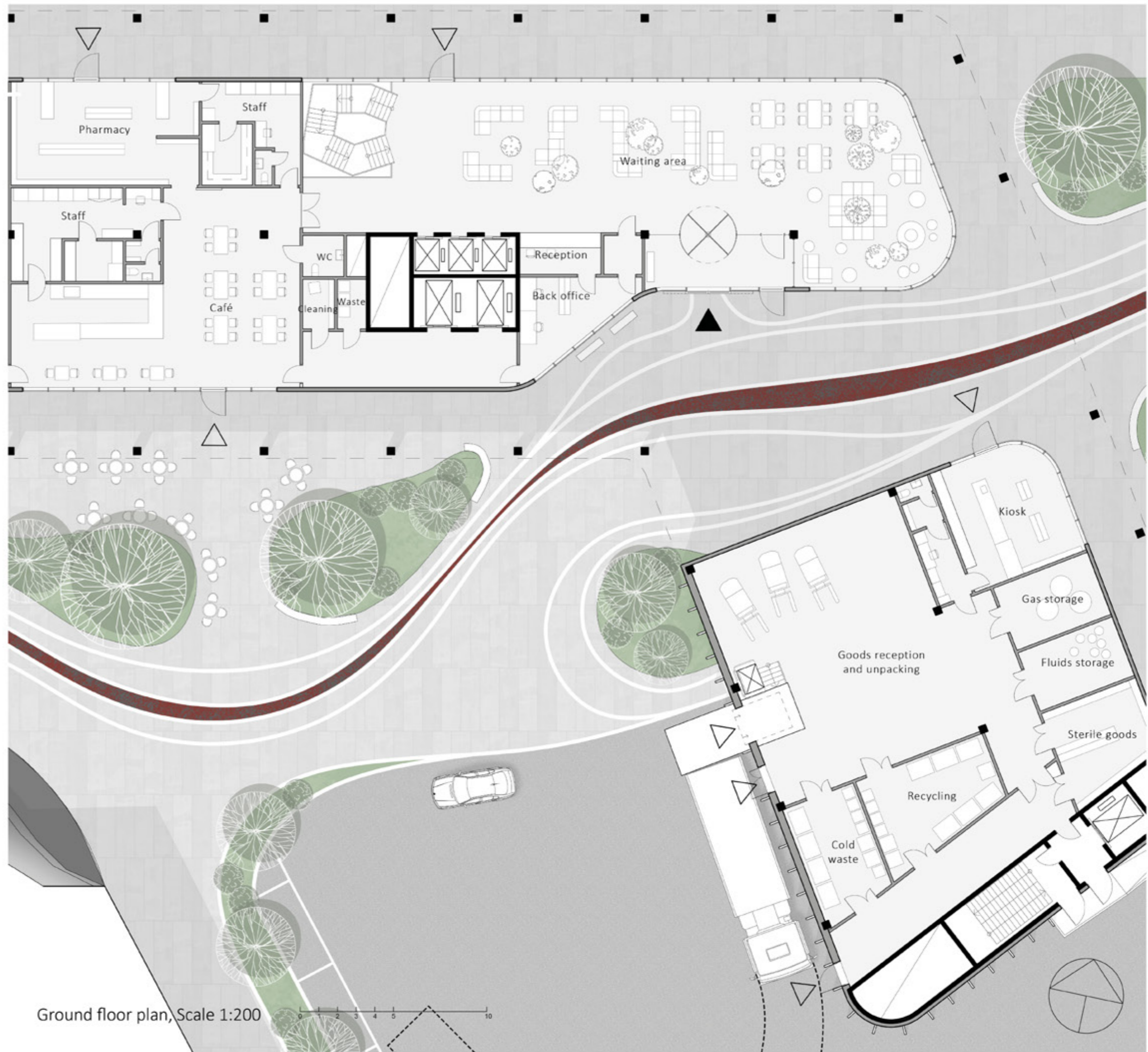
For patients the entrance is located in a weather protected, easily accessed location from Wieselgrensplatsen, to ensure easy navigation and safety.

When entering the building the patients are met by a large waiting area, where the stairs are easily located to the left that then leads to all units. A common reception for all floors is also easily found straight to the left of the entrance, where the patients can get help to check in and find the right unit.

Further inside the building, the patients will reach a café and a pharmacy. These functions can also be reached straight from the outside and during evenings they can function by themselves, being closed off from the hospital.

Staff and logistics have their own entrances in the more closed of, separated part of the hospital. In this part of the hospital you can find the most important and sensitive storages, as well as waste management and goods reception.

When arriving both staff and goods will have to go down into the basement, where additional storage and changing rooms are located.



Ground floor plan, Scale 1:200

PERSPECTIVE
PLAZA



FLOWS & BASEMENT

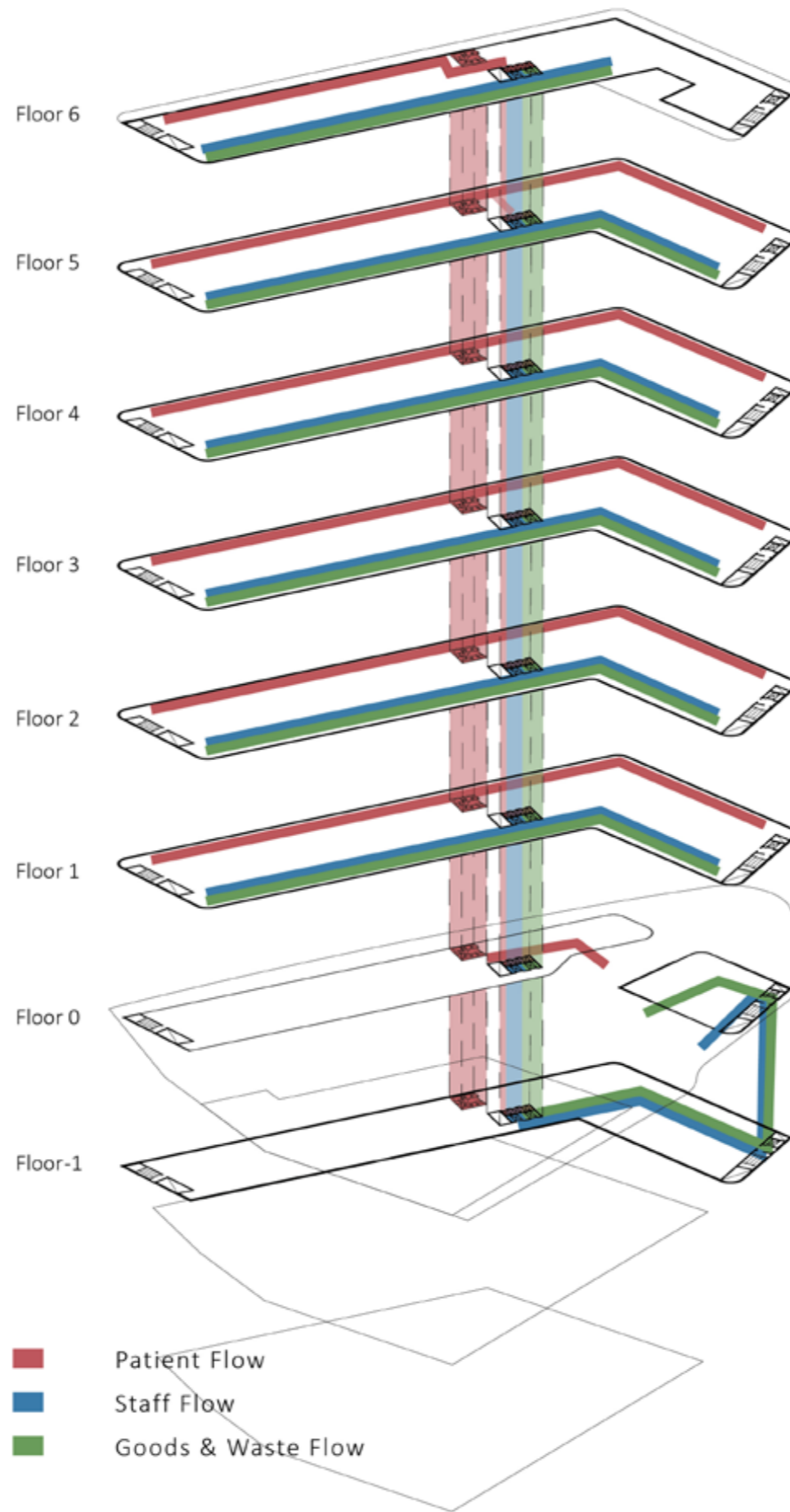


This project has been very strict with working with the separation of flows between patients and staff, which has been one of the main strategies designing this building.

A main concept in regard to the flows of people is that they should never cross. This starts when people enter the building and on the ground floor.

When moving vertically the patients have easy access to the main staircase located in the middle of the building. In close reach you can also find the main elevators. This vertical flow is placed in the middle of each floor for easy navigation. Exiting the vertical flow on each floor, the patients will be drawn to the big windows ahead of them, and gets to choose to take either left or right depending on the unit they are visiting. Moving along the north facade and the one directed towards Wieselgrenplatsen, with the big window openings, it is impossible to get lost, since they won't be able to get anywhere apart from this long corridor.

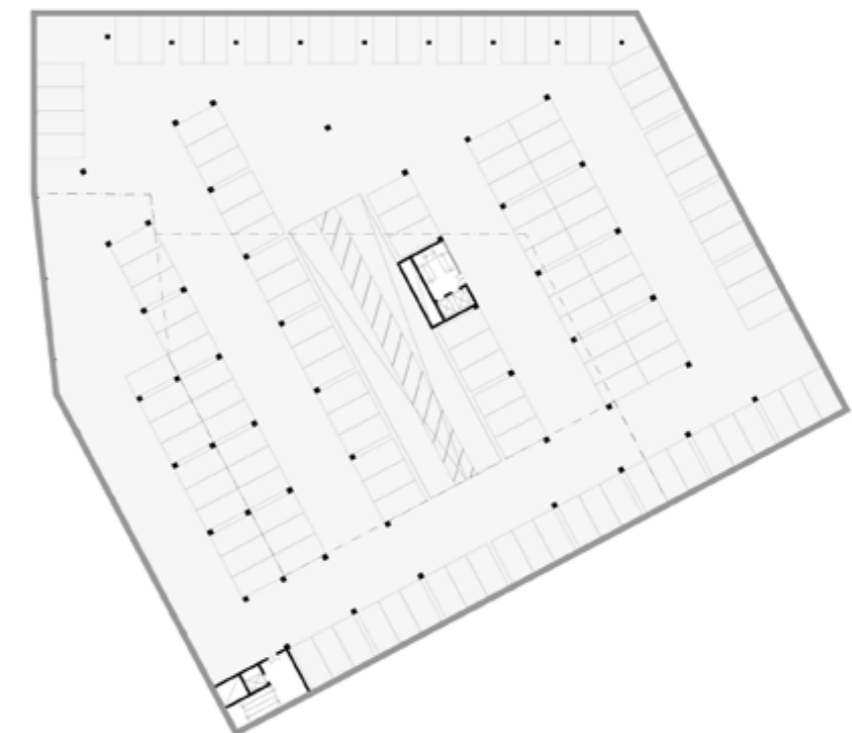
For staff on the other hand, they will first have to go down to the basement to get changed and move to the middle vertical flow. With their own elevators, on the opposite side of the patients elevators, they can move between the floors without having to interact with the patients. With the same principle as for the patient flows, they get to move along the opposite facade, towards the plaza. In the same way the goods and waste are being transported across the building. The only place staff and patients meet is in the examination rooms or patient nodes, which usually are smaller patient meeting rooms.



Floor -1, Scale 1:800



Floor -2, Scale 1:800



CONSTRUCTION & GRID

Each floor is based on a strict grid that is the same across the whole building. The grid is based on the width of two examination rooms. This allows an easy placement of the rooms and doesn't compromise the construction.

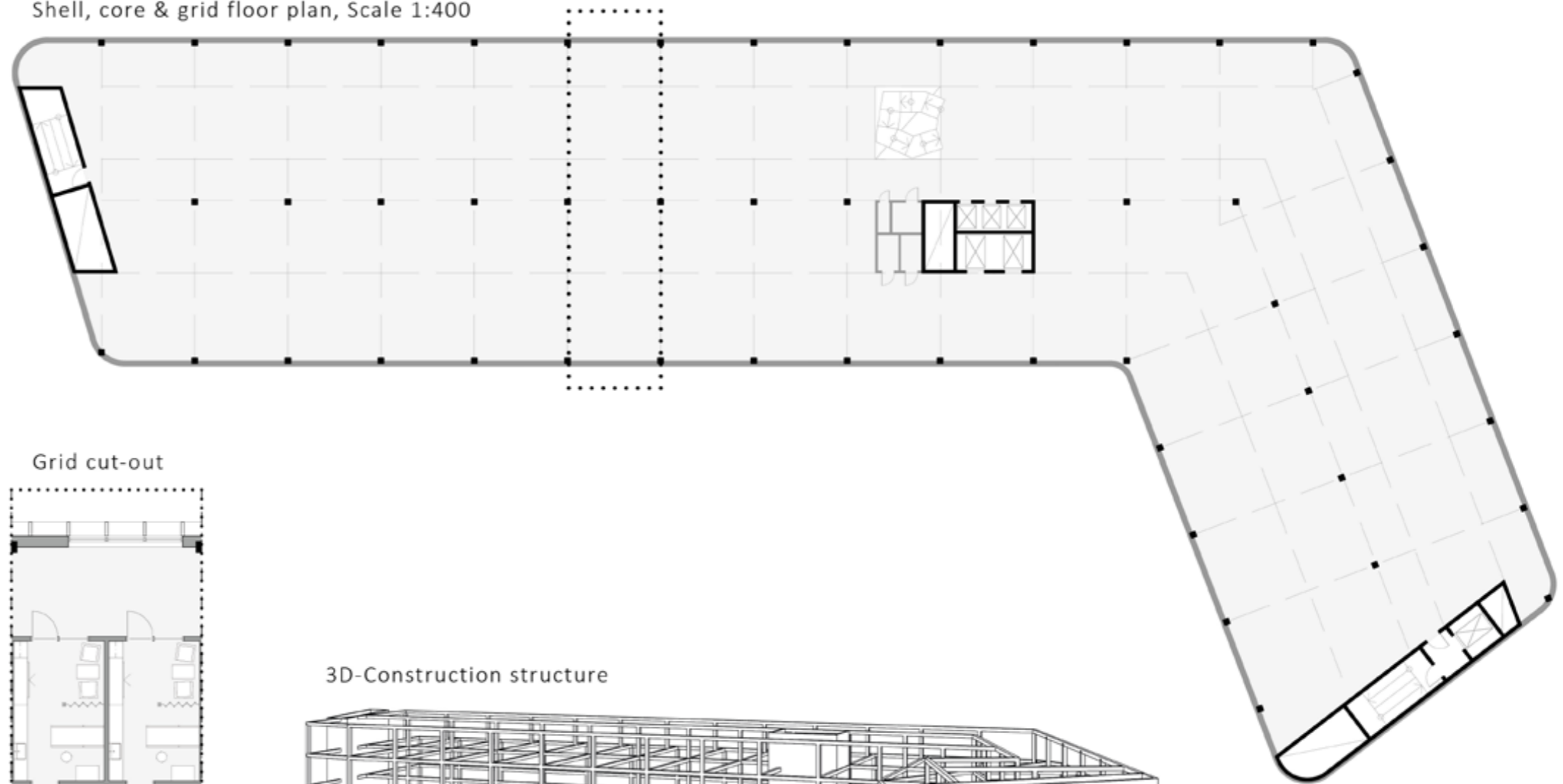
Looking at the plan, the building is also zoned from top to bottom, north to south. The top of the building is meant for patients. A corridor for them to arrive to their room, with a view over Hjalmarbrantingsgatan and Wieselgrensplatsen. Then comes the examination rooms, where the patient easily can locate in this strict corridor.

The staff enter from the other side of the examination rooms, where they will then meet the patients. The next "package" of rooms is supporting functions that does not need any daylight. These include storages, copyrooms, toilets, some grouprooms and phone booths. It is in these dark spaces that the elevators are located.

In the bottom of the grid is where all the administration areas are located. These rooms can be adapted to the units needs, but there are both closed office spaces, as well as more open landscape. Either way it relates to the brief. Here the staff will have good daylight and a good view of the plaza.

The construction is a hybrid of concrete and timber. The four first floors is a concrete construction, of concrete columns and concrete hollow core slabs. The three top floors is then a timber construction of CLT ribbed slabs and glulam beams and columns. This is to try to reduce the CO₂ footprint as much as possible, even though the heavy hospital functions needs a concrete construction due to weight and vibration.

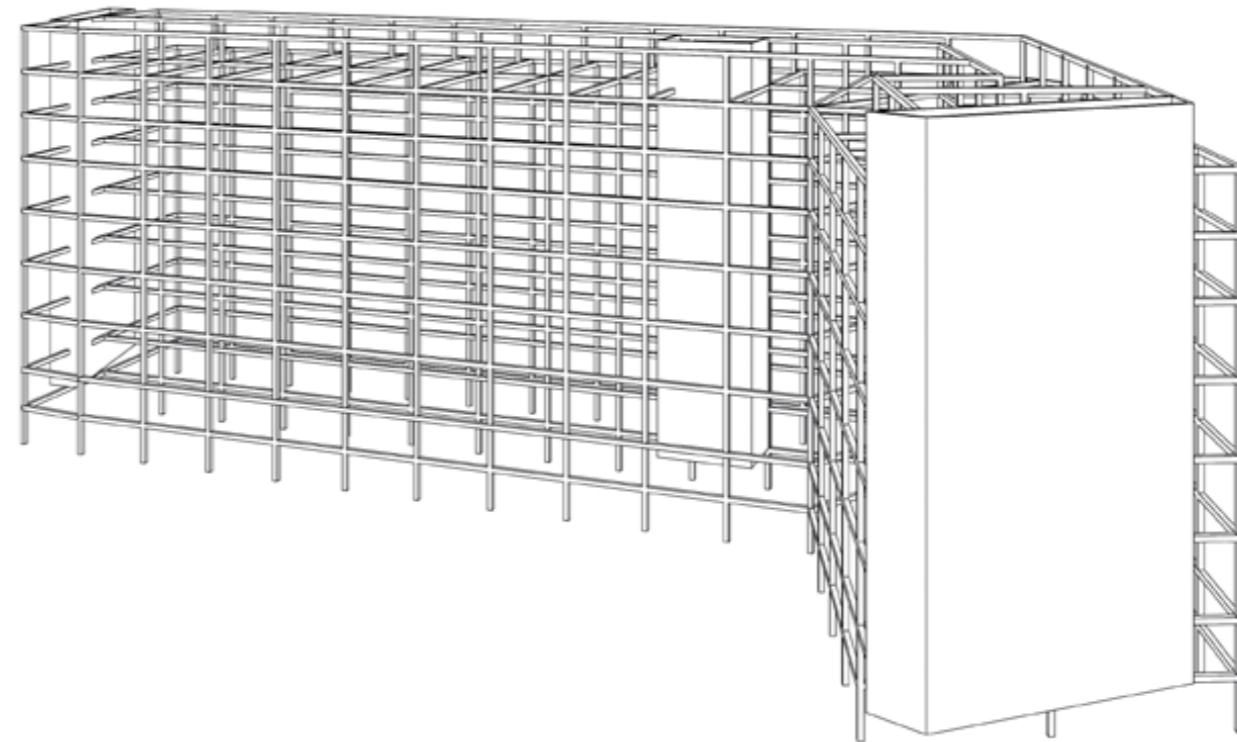
Shell, core & grid floor plan, Scale 1:400



Grid cut-out



3D-Construction structure



0 1 2 3 4 5 10



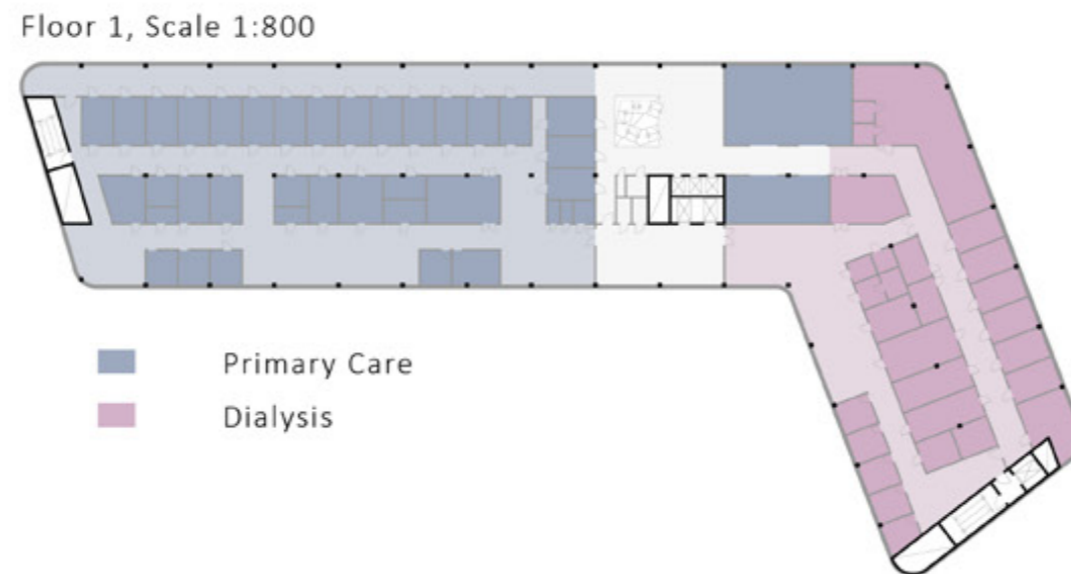
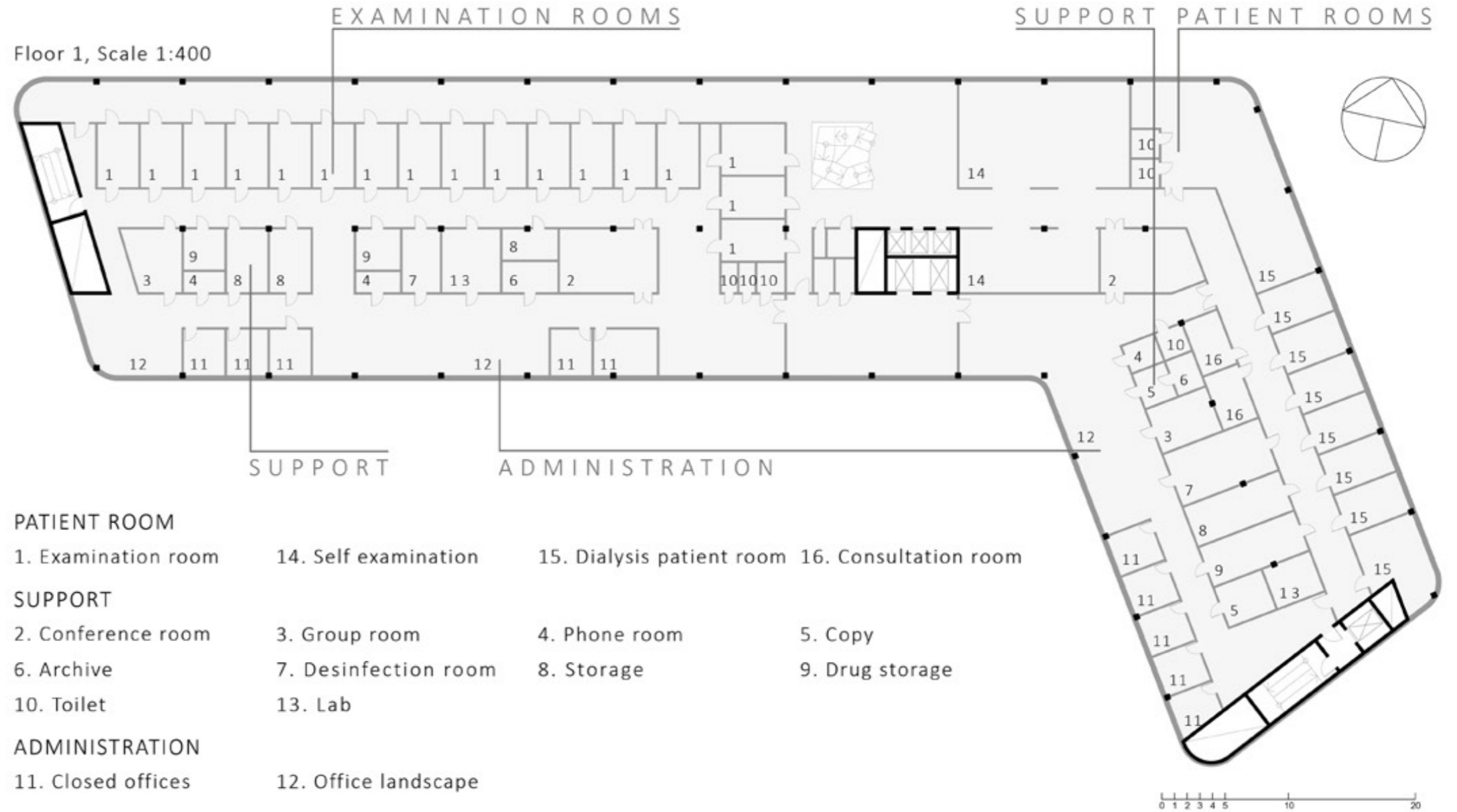
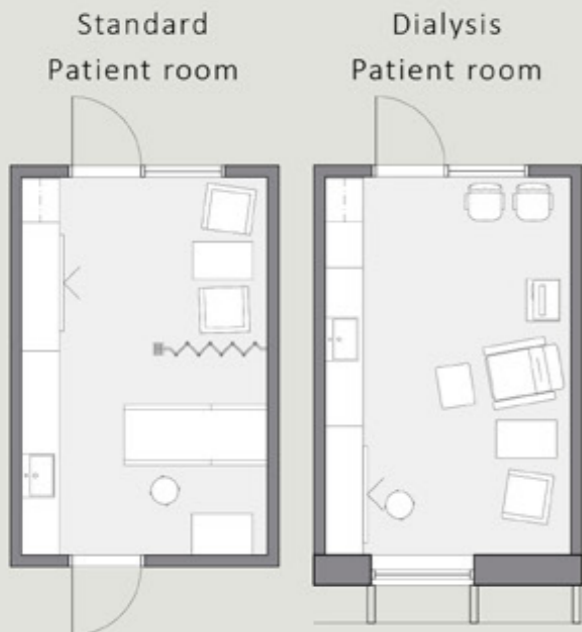
FLOOR 1



Floor one consist of Primary care and Dialysis. Since dialysis patients spend so much time in their rooms, this unit is a special case, and deviates from our usual concept of seperated flows and corridors along the facade. Instead the corridor in this unit is on the inside of the patient rooms. Apart from that, the Primary care follows the concept of seperated flows, where they find their room clearly labeled doors by numbering them.

On the first floor there is also an expansion of the primary care, that is a new addition to the brief. This is a self examination space for people to go and do simple checkups for free, on their own. This includes the checking of bloodpressure, heartbeat and bloodsugar as a few examples.

The patient rooms in the Primary care consist of standard examination rooms and in the Dialysis unit they are designed for more long comfortable stays for the patients and therefore differs a bit from the standard room.

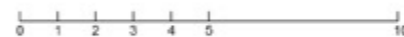
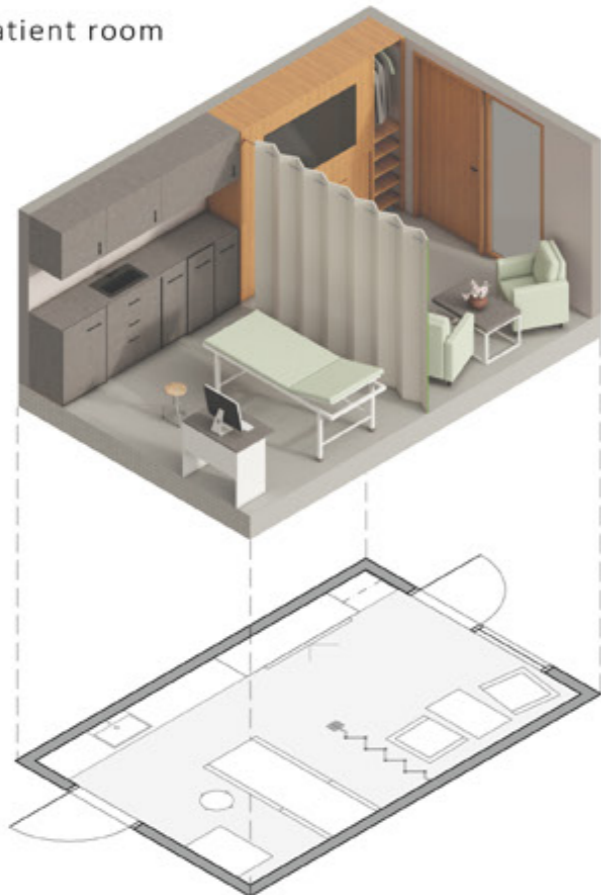


FLOOR 1



Floor 1, Scale 1:200

Surgery patient room
Axio

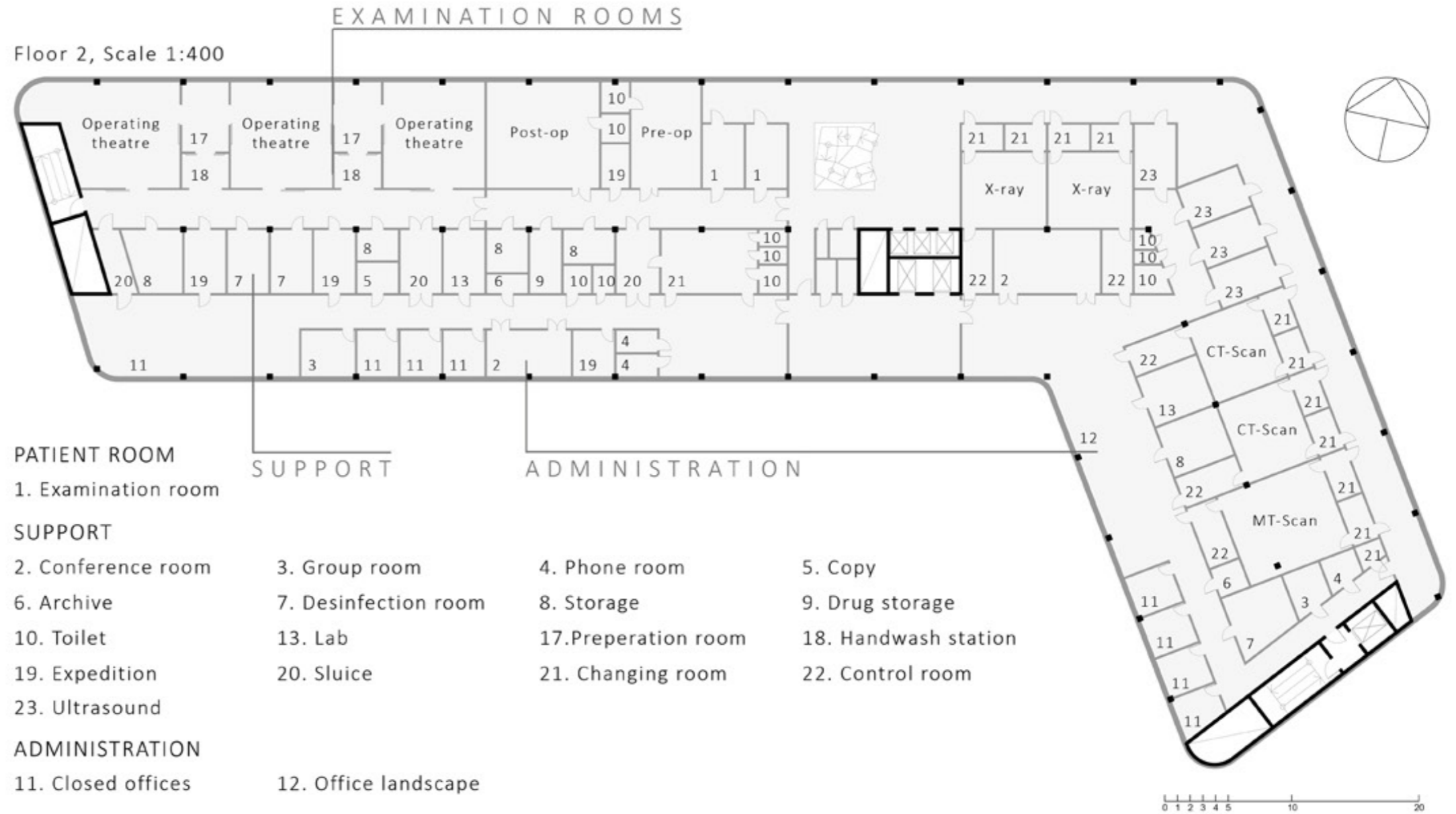


FLOOR 2

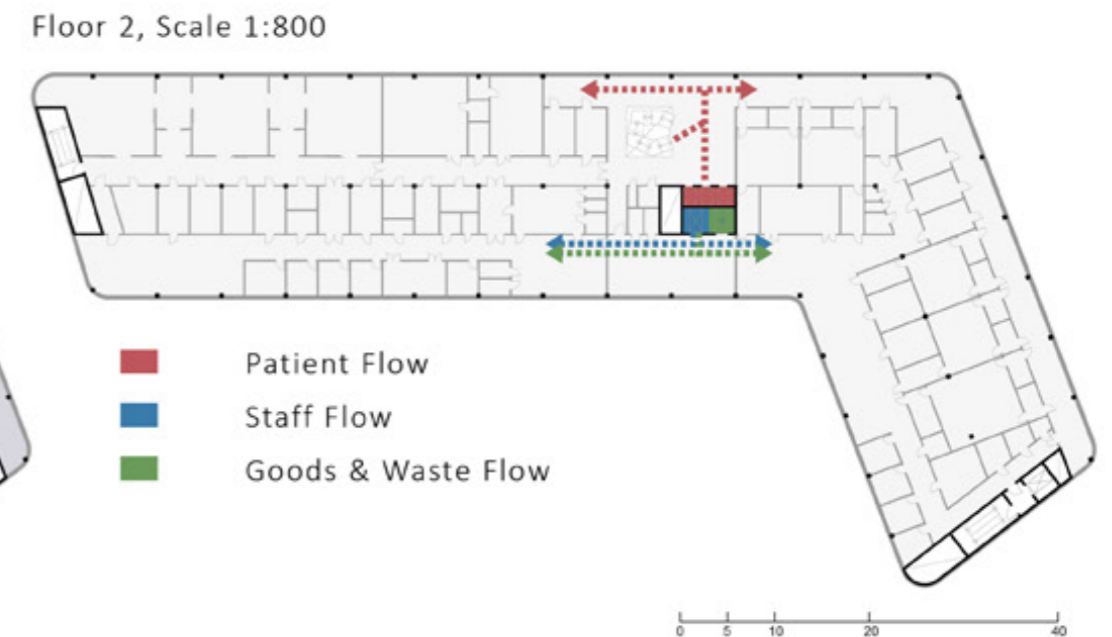
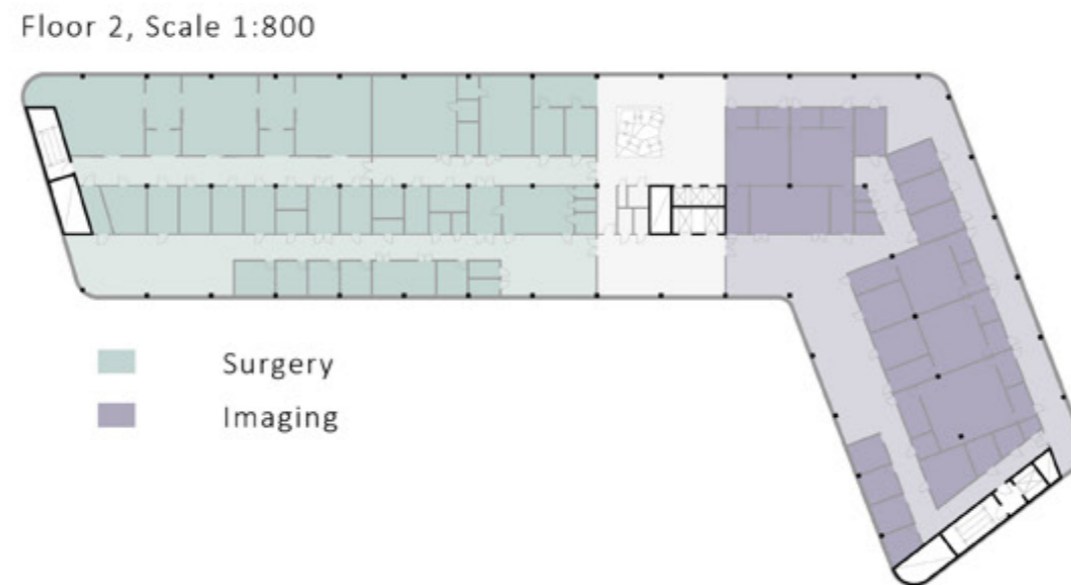


The second floor consists of the Surgery unit and Imaging. Since these are high-tech units and requires larger and heavier functions, as well as having other demands, these deviates from the main concept of having seperated flows. They still follow the concept of having patient rooms or patient nodes, where the first meeting between patients and staff happen. These rooms are also designed for changing, to limit the movement inside the unit for patients.

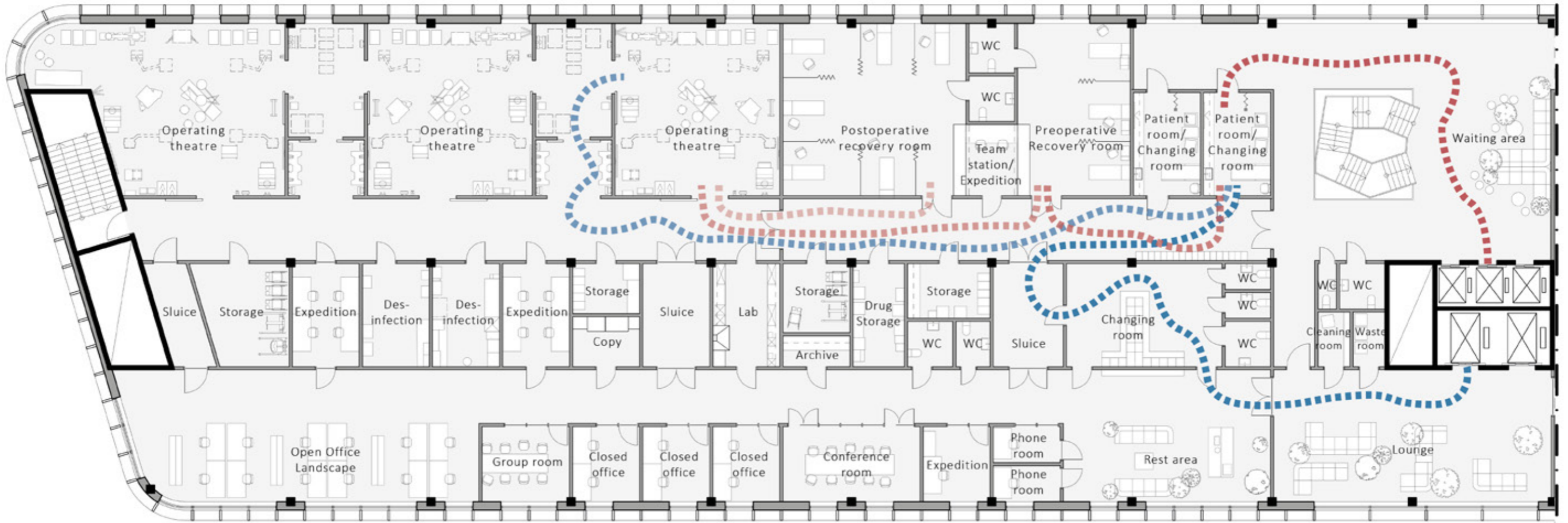
Apart from that these units have the same staff area, with the supporting functions in the middle of the building, and more administrative spaces are located towards the southern facades.



Surgery patient room

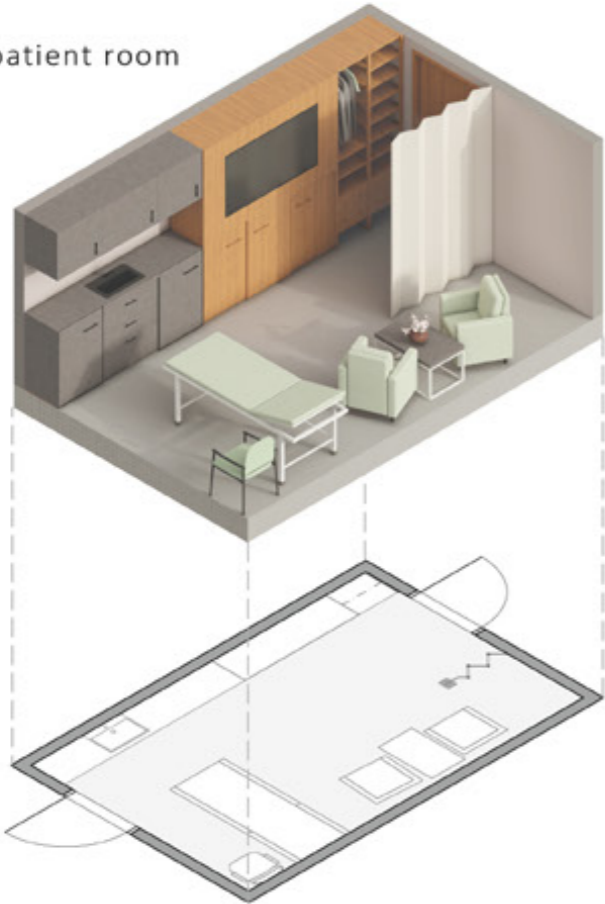


FLOOR 2

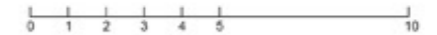
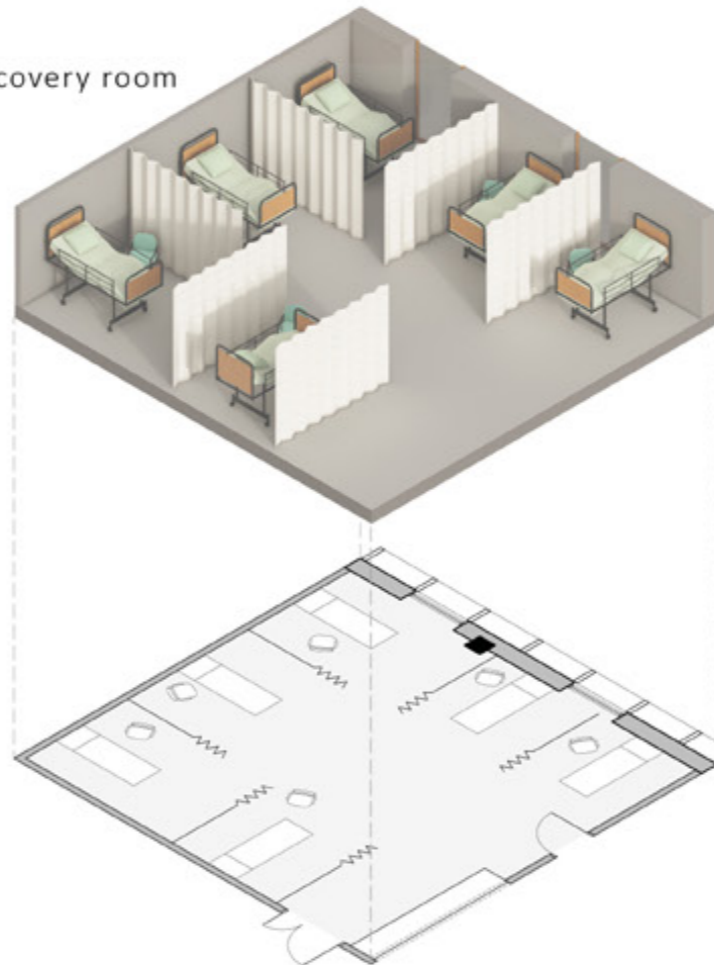


Floor 2, Scale 1:200

Surgery patient room
Axio



Postoperative recovery room
Axio



FLOOR 3



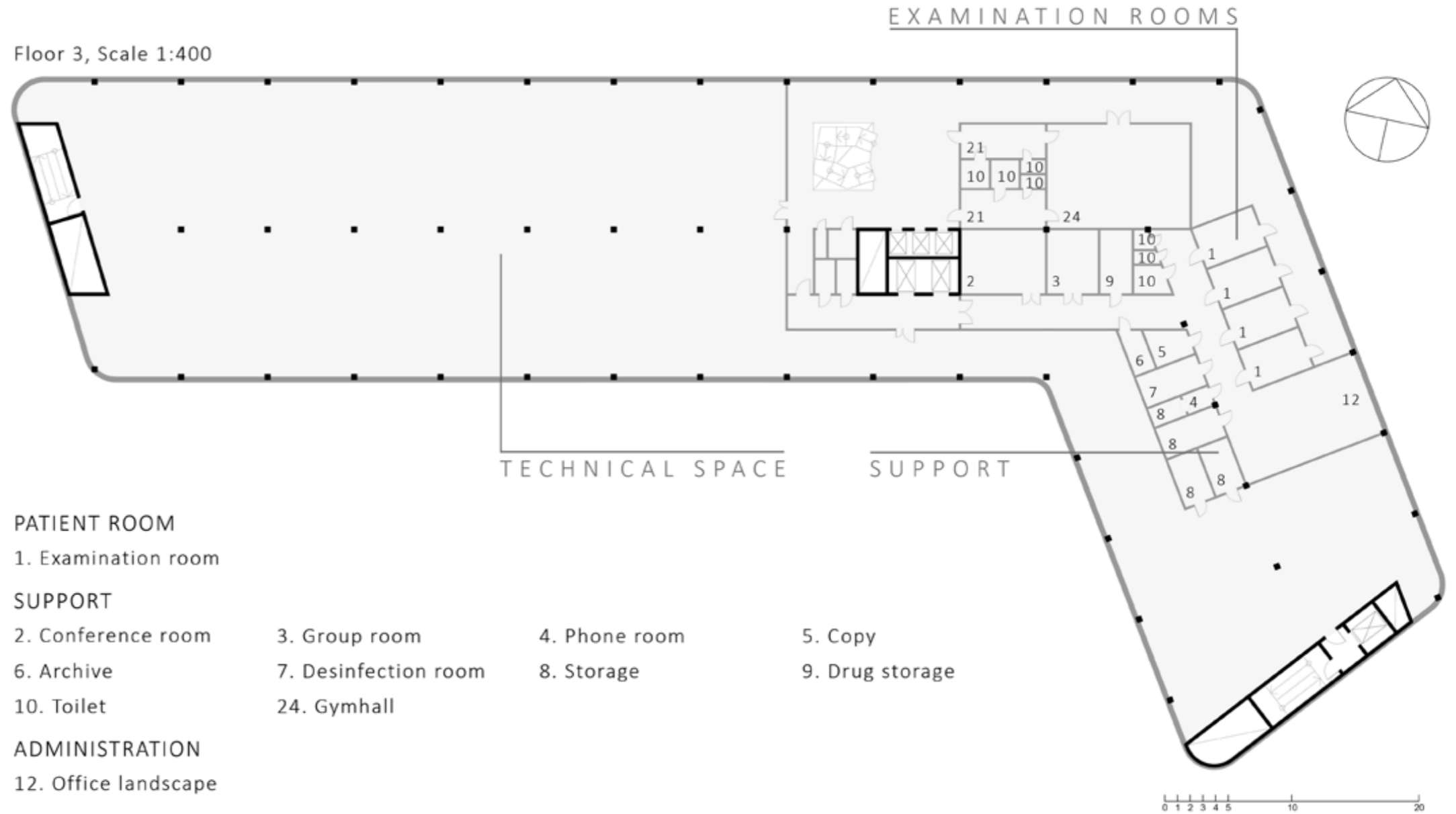
The third floor mostly consists of technical space, to support the whole hospital with technical functions, and is located here to have close connections with the high-tech function one floor down that requires a lot of technical supply.

It also consists of the rehab unit, which requires a high-tech floor for the gymhall which needs a high ceiling. The gymhall is easily accessible, close to the stairs for other unit patients to use.

The administrative spaces in this unit is not located towards the south facade, because of the technical spaces. Instead their office spaces are located towards Wieselgrensplaten, to fulfill the daylight requirements.

The rehab patient rooms is very similar to the standard examination rooms, with the exception of having a bigger rehabilitative care beds for better examinations and care.

Floor 3, Scale 1:400



PATIENT ROOM

- 1. Examination room

SUPPORT

- 2. Conference room
- 3. Group room
- 4. Phone room
- 5. Copy
- 6. Archive
- 7. Desinfection room
- 8. Storage
- 9. Drug storage
- 10. Toilet
- 24. Gymhall

ADMINISTRATION

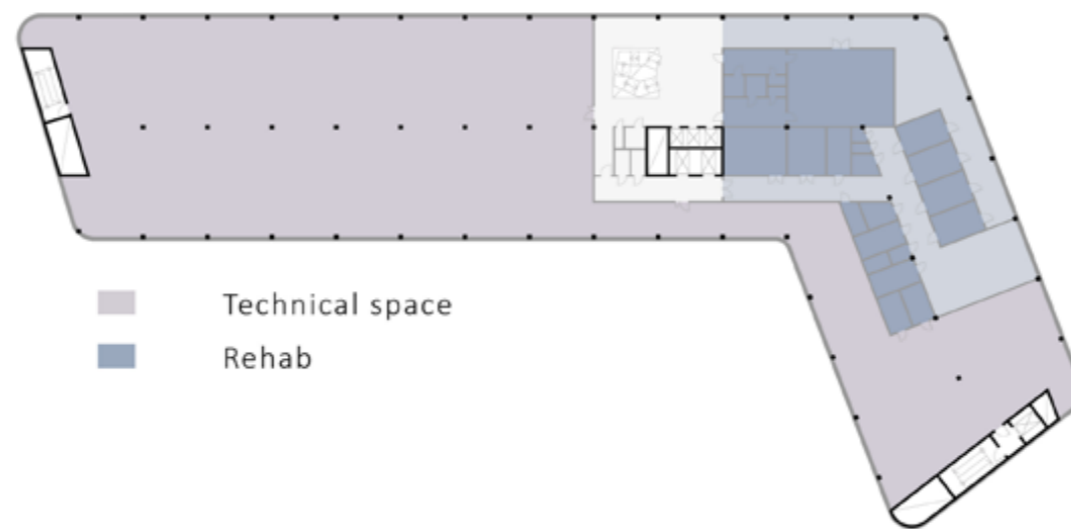
- 12. Office landscape



Rehab Patient room

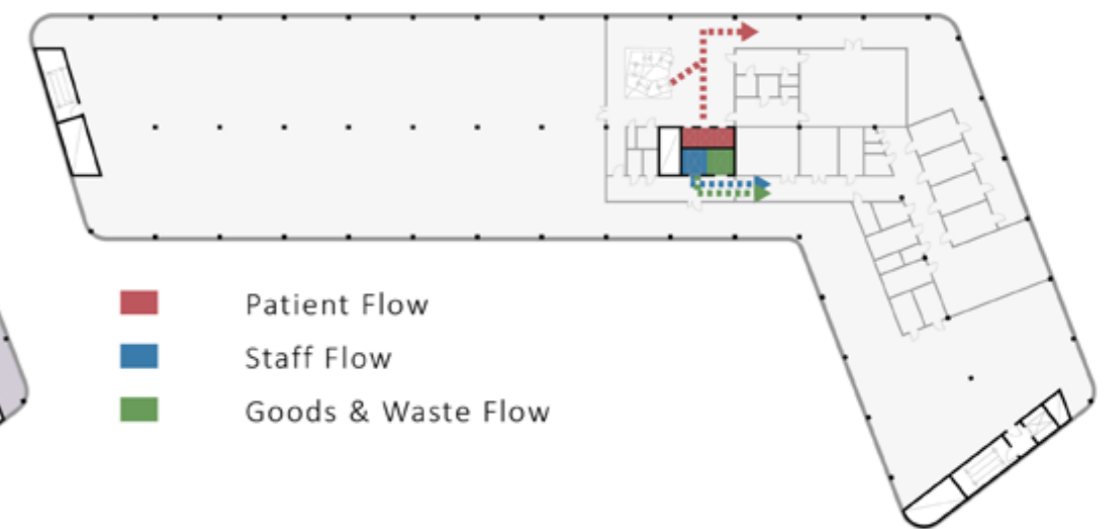


Floor 3, Scale 1:800



- Technical space
- Rehab

Floor 3, Scale 1:800

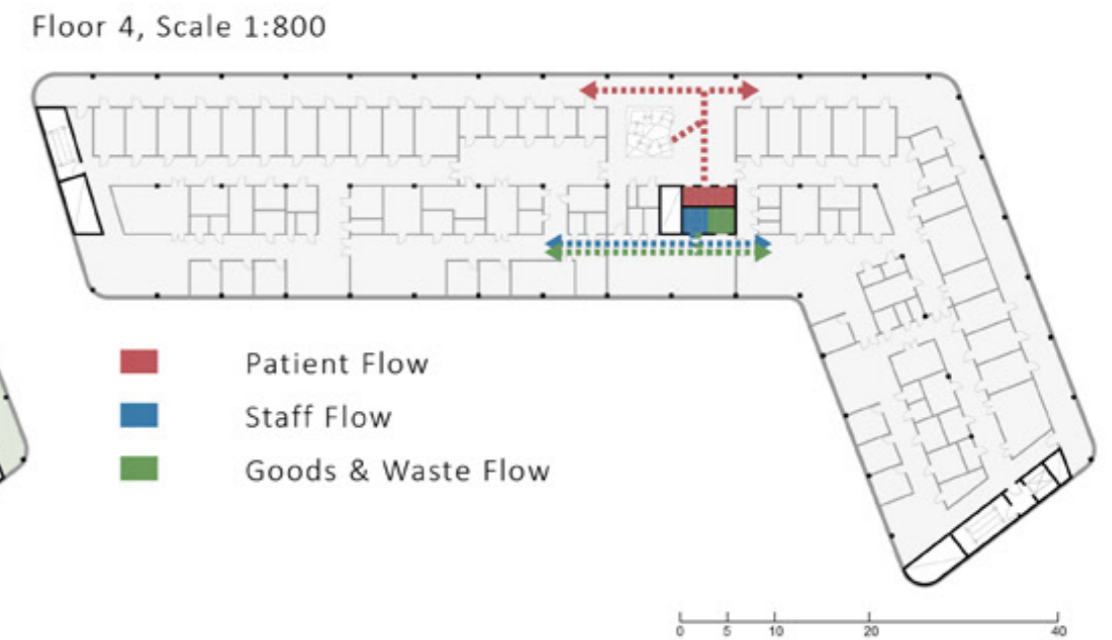
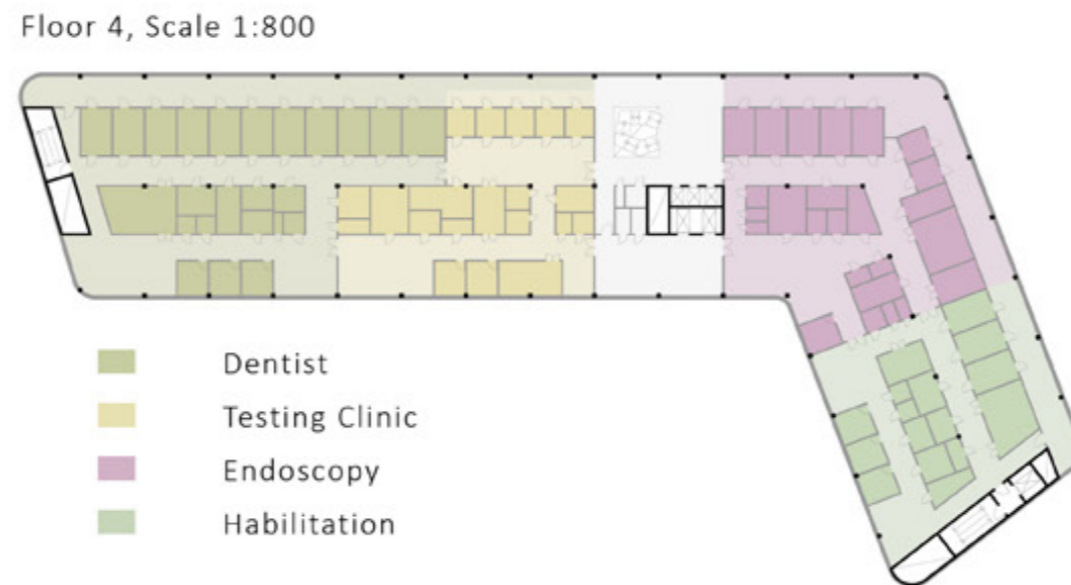
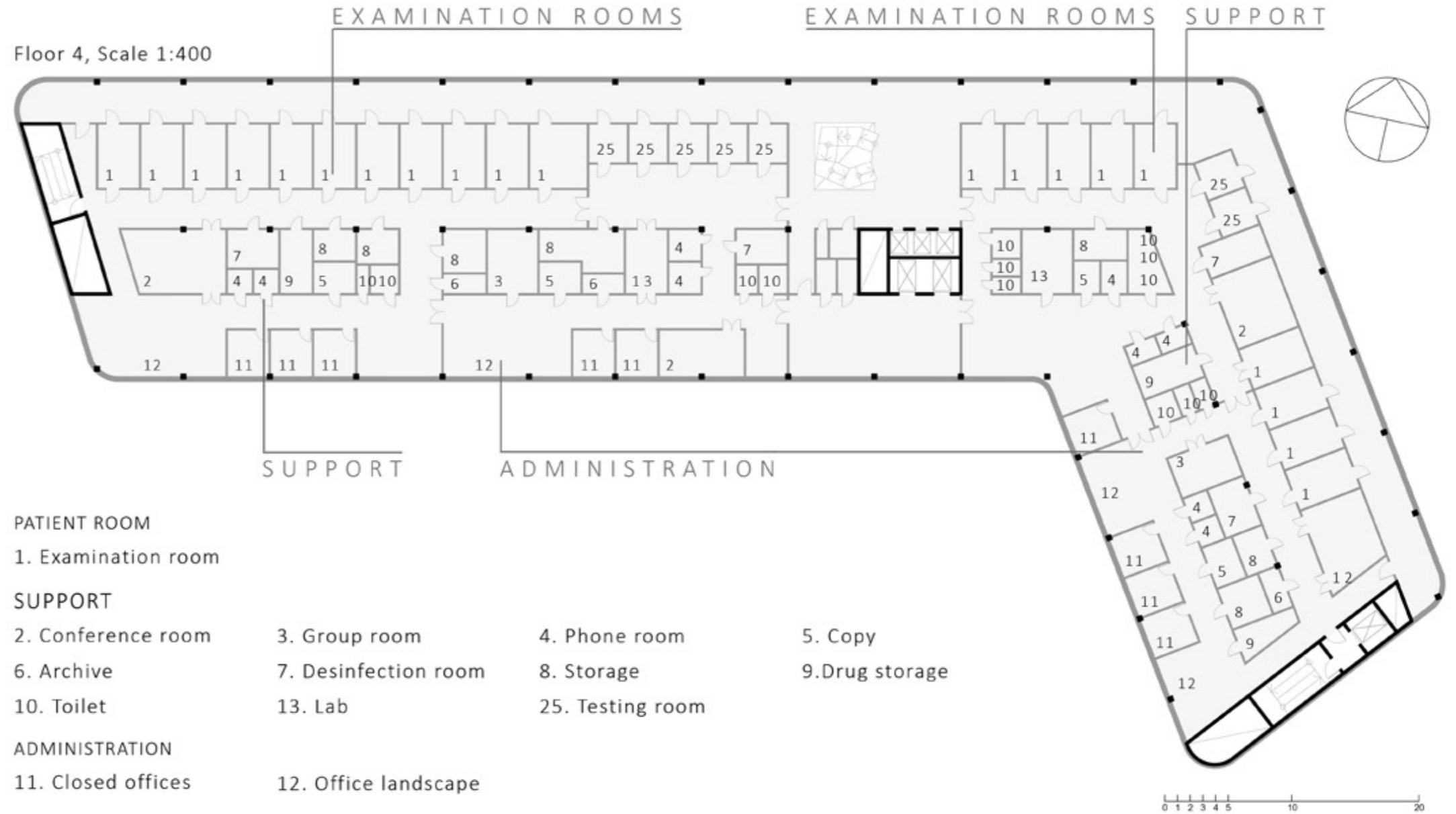
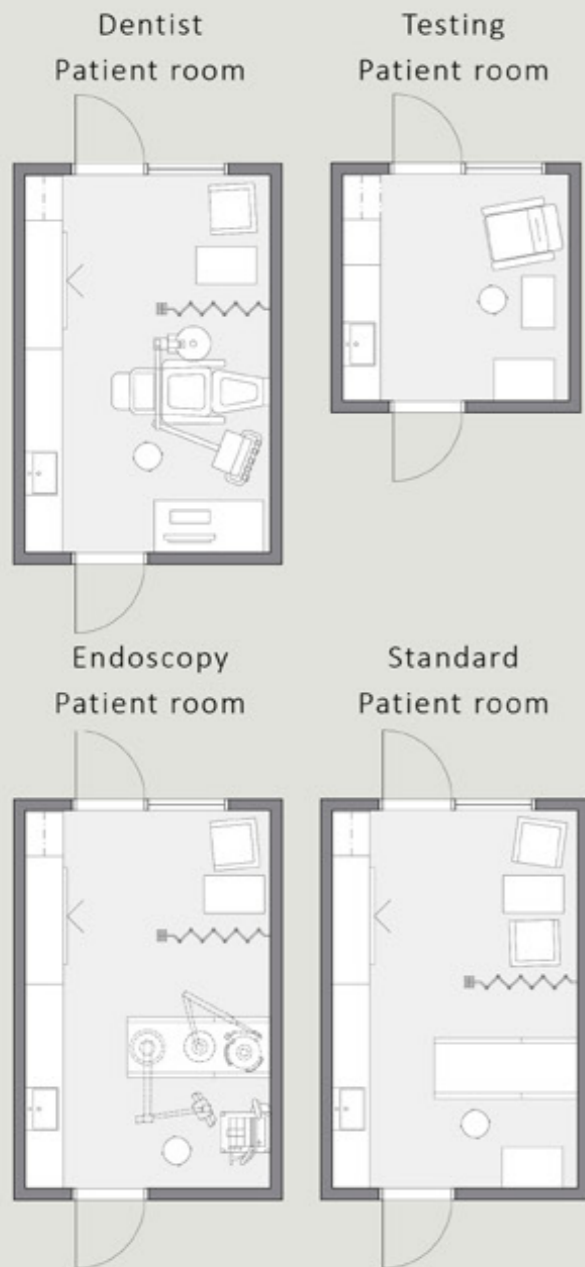


- Patient Flow
- Staff Flow
- Goods & Waste Flow



FLOOR 4

The fourth floor is divided into four smaller units. The principle is that it follows the concept of having separated flows very strictly, even though some staff has to pass through another unit to reach their own. The idea is that the units are so small, that it wouldn't disrupt the work for the unit being in the middle. In the other floors the staff in one unit share the same space, so it should work to share it between two units as well, since the number of staff should be similar. Each unit has its own unique patient room except Habilitation, which uses the standard patient rooms.



FLOOR 5

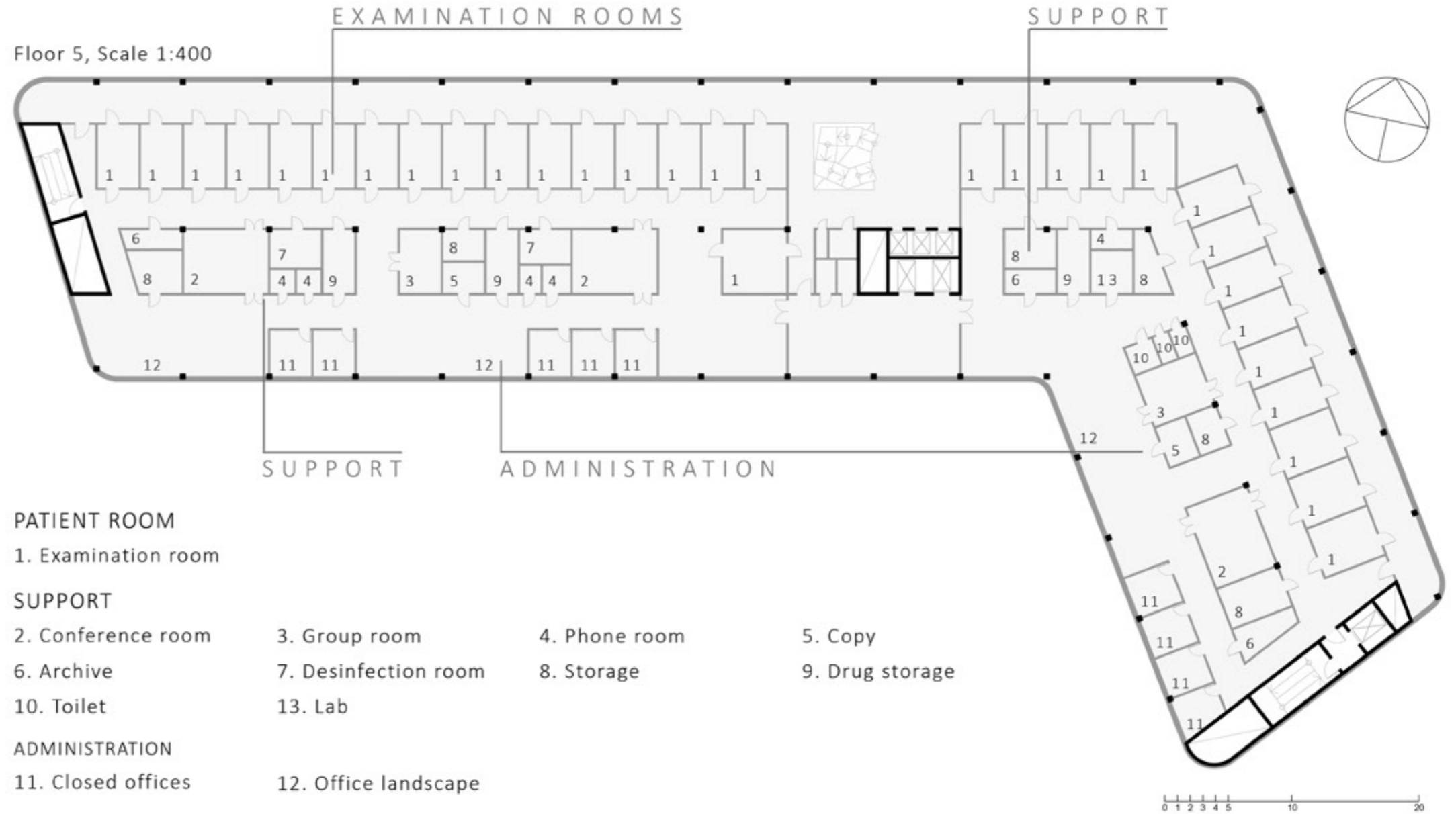


This floor is only meant for the specialist clinic. This unit follows the concept of separated flows very strictly and doesn't deviate from it at all.

The supporting functions have been spread out across the floor, so that the unit can be divided if necessary. And even though it's the same unit, the entering doors in the middle core is still there, to make sure patient confidentiality, and the flexibility for future use.

There are 31 examination rooms, in two different sizes. They are designed to be the standard examination room, but depending on the specialists focus, these rooms can become more individual depending on the purpose, having different equipment and furniture.

Standard Patient room



PATIENT ROOM

- 1. Examination room

SUPPORT

- 2. Conference room
- 3. Group room
- 4. Phone room
- 5. Copy
- 6. Archive
- 7. Disinfection room
- 8. Storage
- 9. Drug storage
- 10. Toilet
- 13. Lab

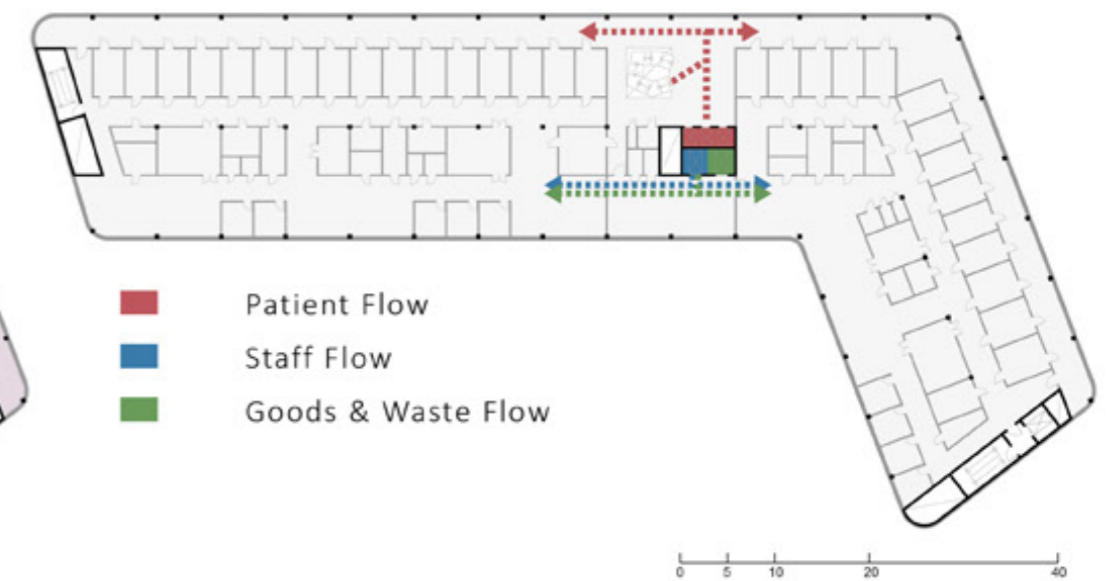
ADMINISTRATION

- 11. Closed offices
- 12. Office landscape

Floor 5, Scale 1:800



Floor 5, Scale 1:800



FLOOR 6



The top floor consists of two smaller units and the combined staff functions, such as lunchroom, resting rooms and bigger conference rooms.

Parts of the floor has been offsetted, to create a terrace for patients and staff, which are also separated from each other.

The units is still planned in the same way, even though the grid is a bit smaller. The only deviation is that the rooms towards north doesn't only consist of examination rooms, but also conference rooms and a lab in this case.

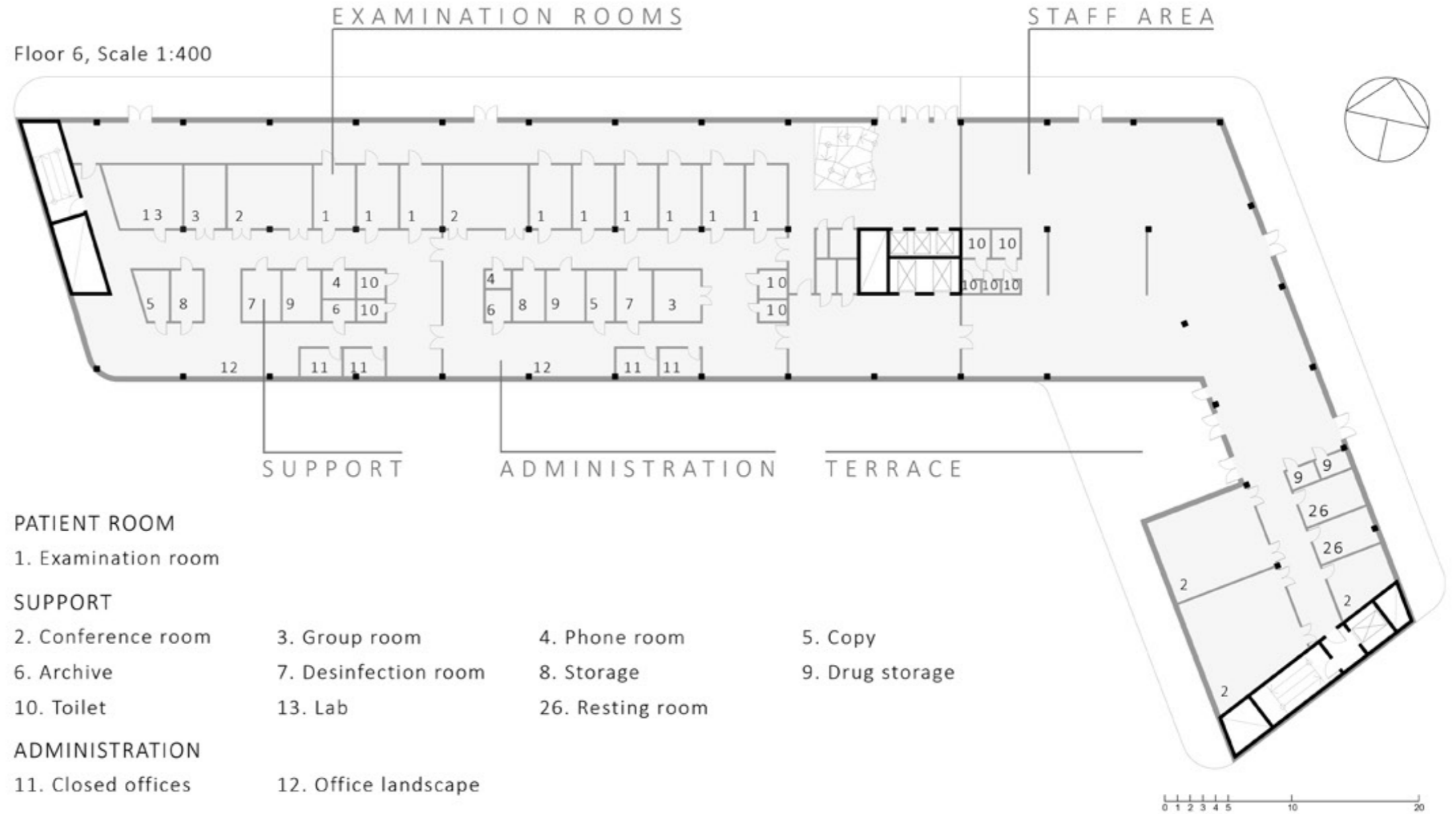
The MVC that is included in the Regional health requires gynecological examination chairs, and therefore has a slightly different furnishing.

The BUMM that also is included in the Regional health uses the standard examination room. As well as the BUP, where both consultation space and the option of laying down is provided.

Regional Health Patient room



Standard Patient room



PATIENT ROOM

- 1. Examination room

SUPPORT

- 2. Conference room
- 3. Group room
- 4. Phone room
- 5. Copy
- 6. Archive
- 7. Desinfection room
- 8. Storage
- 9. Drug storage
- 10. Toilet
- 13. Lab
- 26. Resting room

ADMINISTRATION

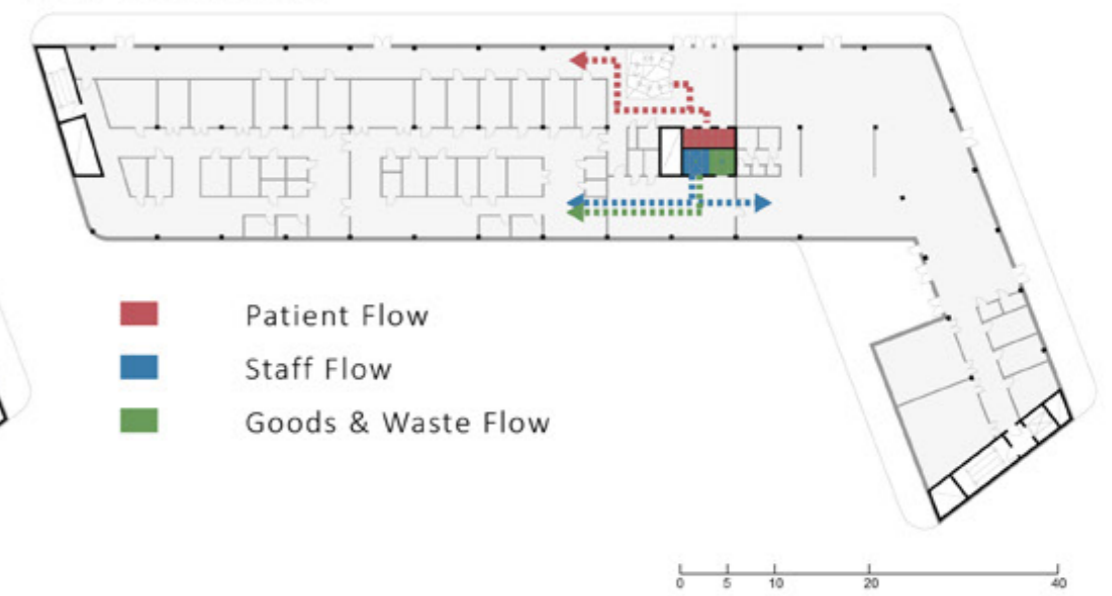
- 11. Closed offices
- 12. Office landscape

Floor 6, Scale 1:800

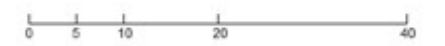


- Regional Health
- BUP
- Staff Area

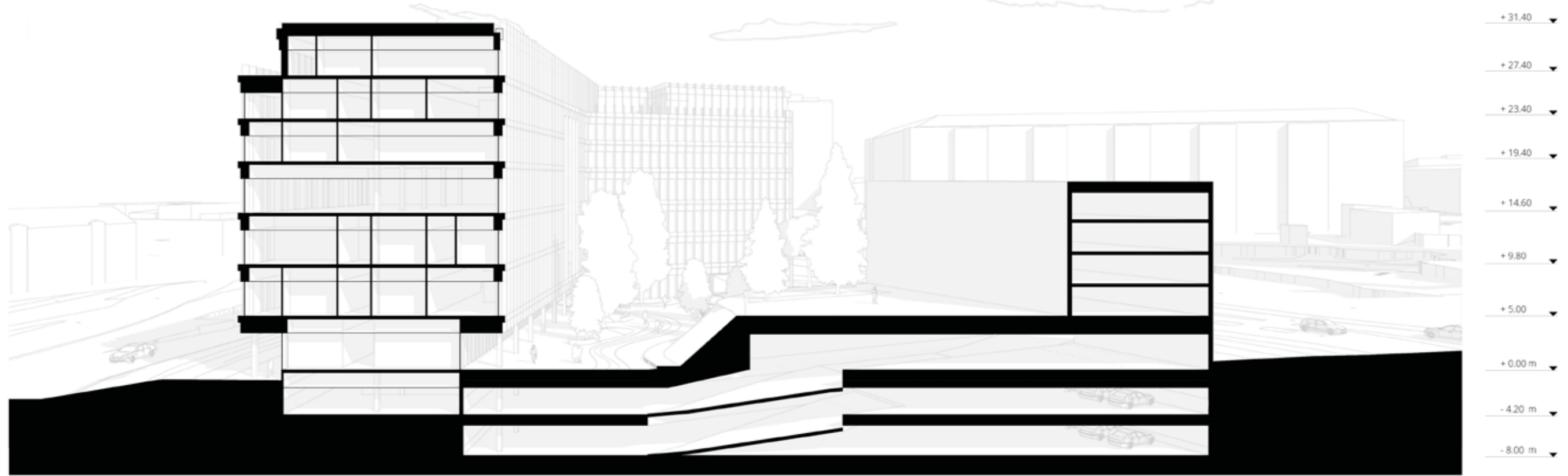
Floor 6, Scale 1:800



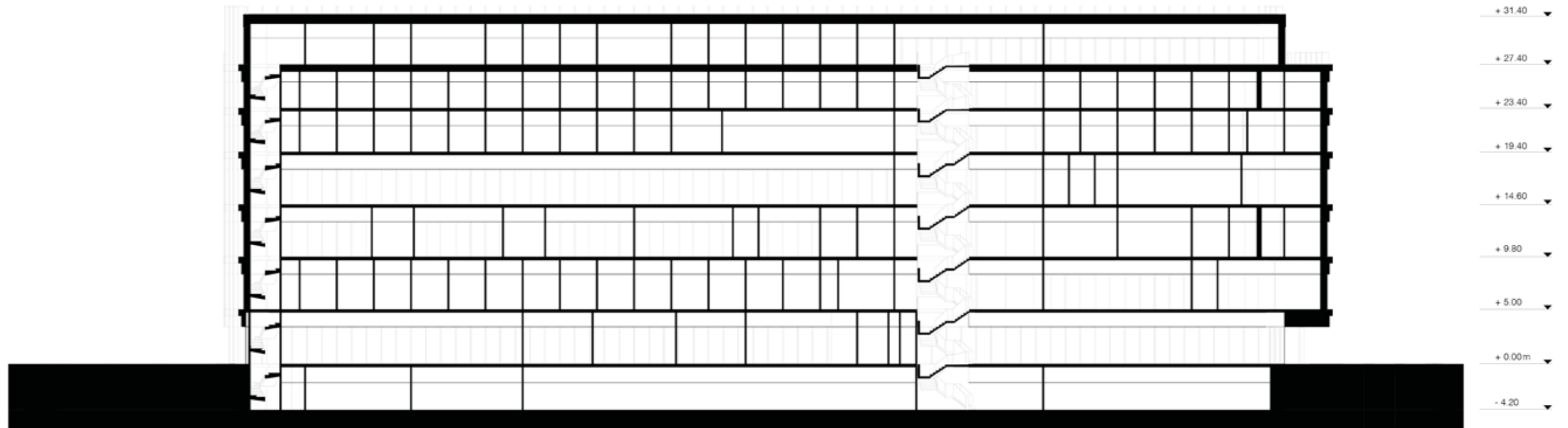
- Patient Flow
- Staff Flow
- Goods & Waste Flow



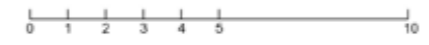
SECTIONS



Section A-A, Scale 1:400



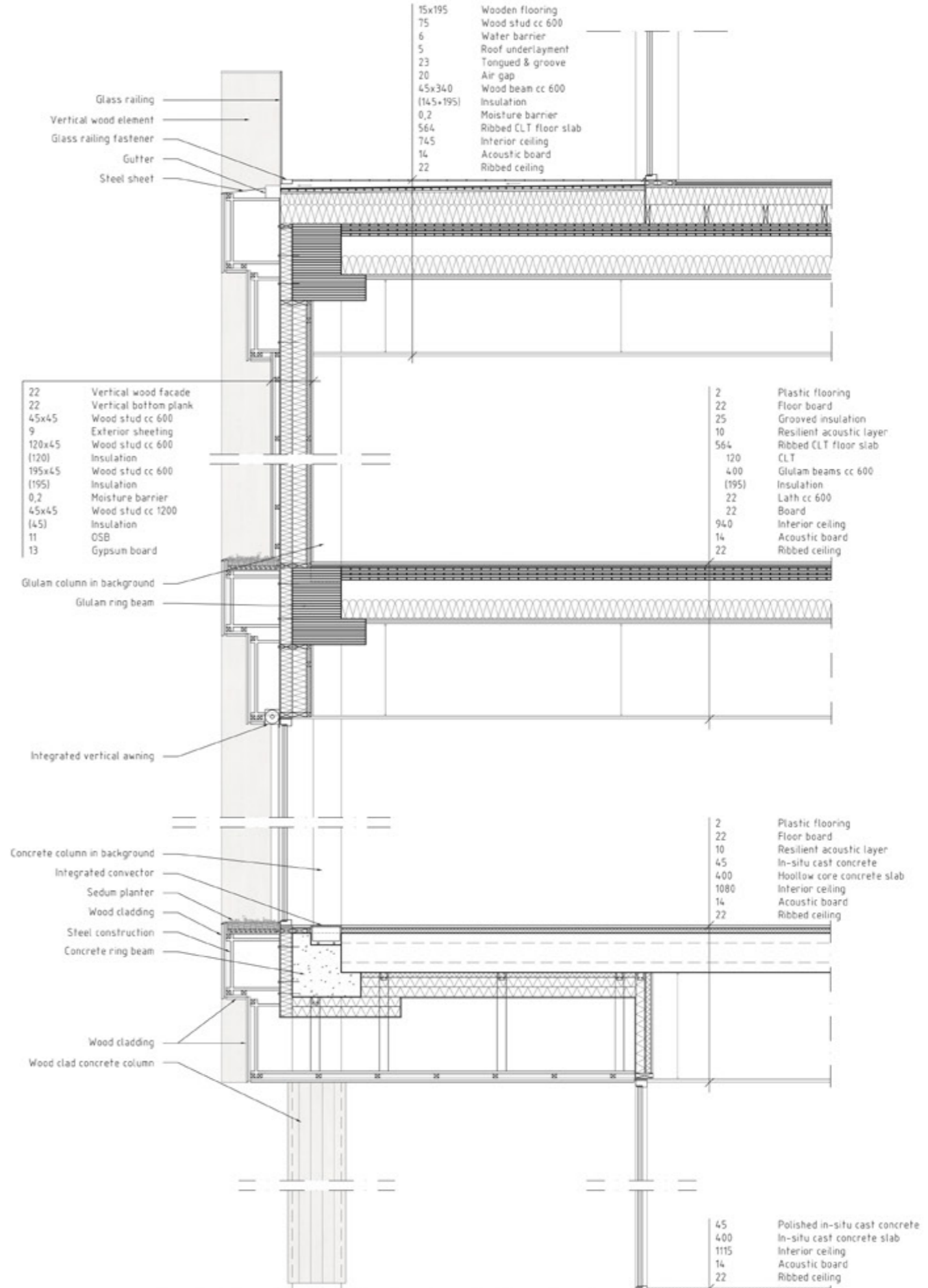
Section B-B, Scale 1:400



FLOOR 2



Wall Elevation, Scale 1:50



Detail Section, scale 1:50

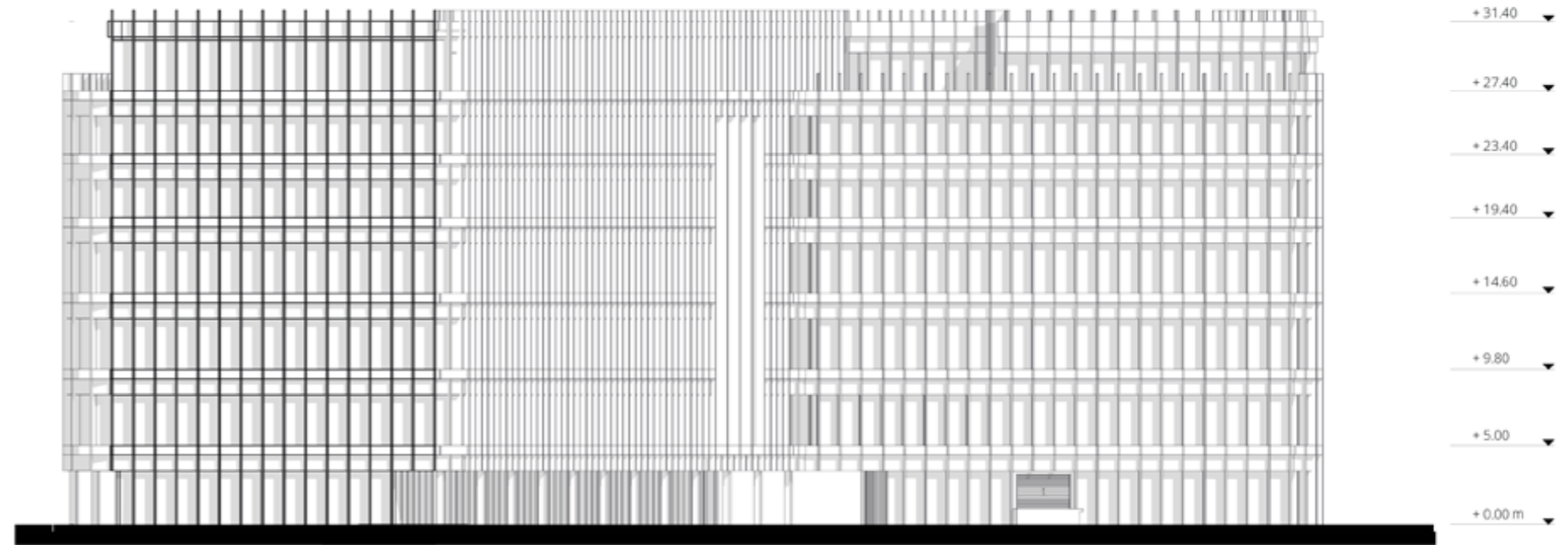
ELEVATIONS



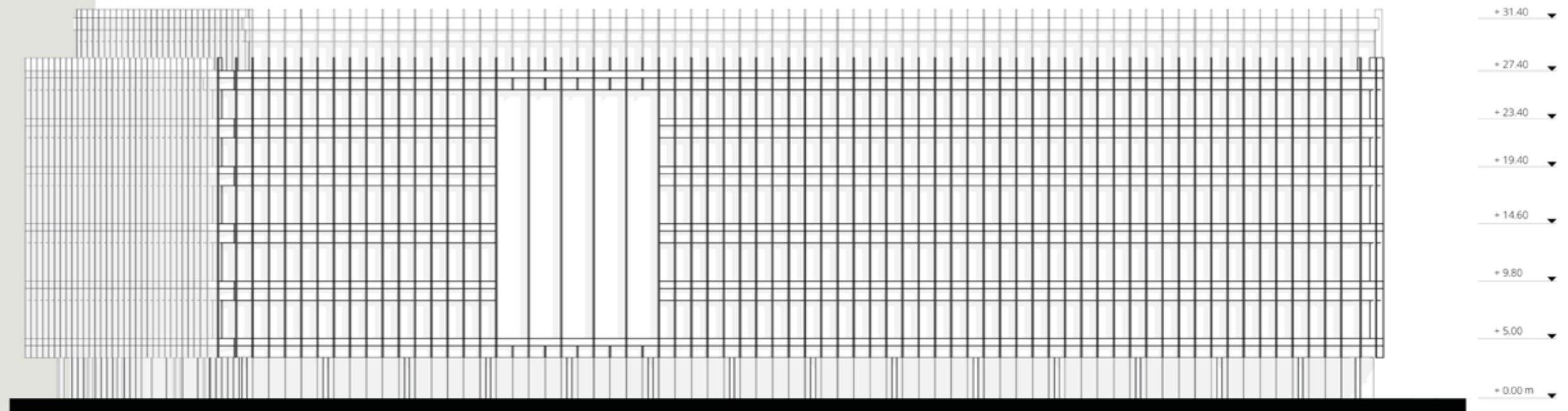
The facades are based on the principle of being the same throughout, except from where the permanent vertical flow is located in the middle of the building. This makes the facade coherent, but still having something that breaks down these really long facades.

The idea is to adapt the building to the human scale as much as possible, even though it's a very large volume. This is achieved by making sure it is easy to read the building and it's construction. To recognise each floor level and creating some kind of horizontality. At the same time we want the facade to be balanced and proportional throughout.

The grid is strict, and so is the material inbetween the grid. The idea is to have a set of three different materials, either a filling of glass, wood or a greenery. These can be placed more irregularly however to make a more varied expression and not making the look as strict.



West Facade, Scale 1:400



North Facade, Scale 1:400

