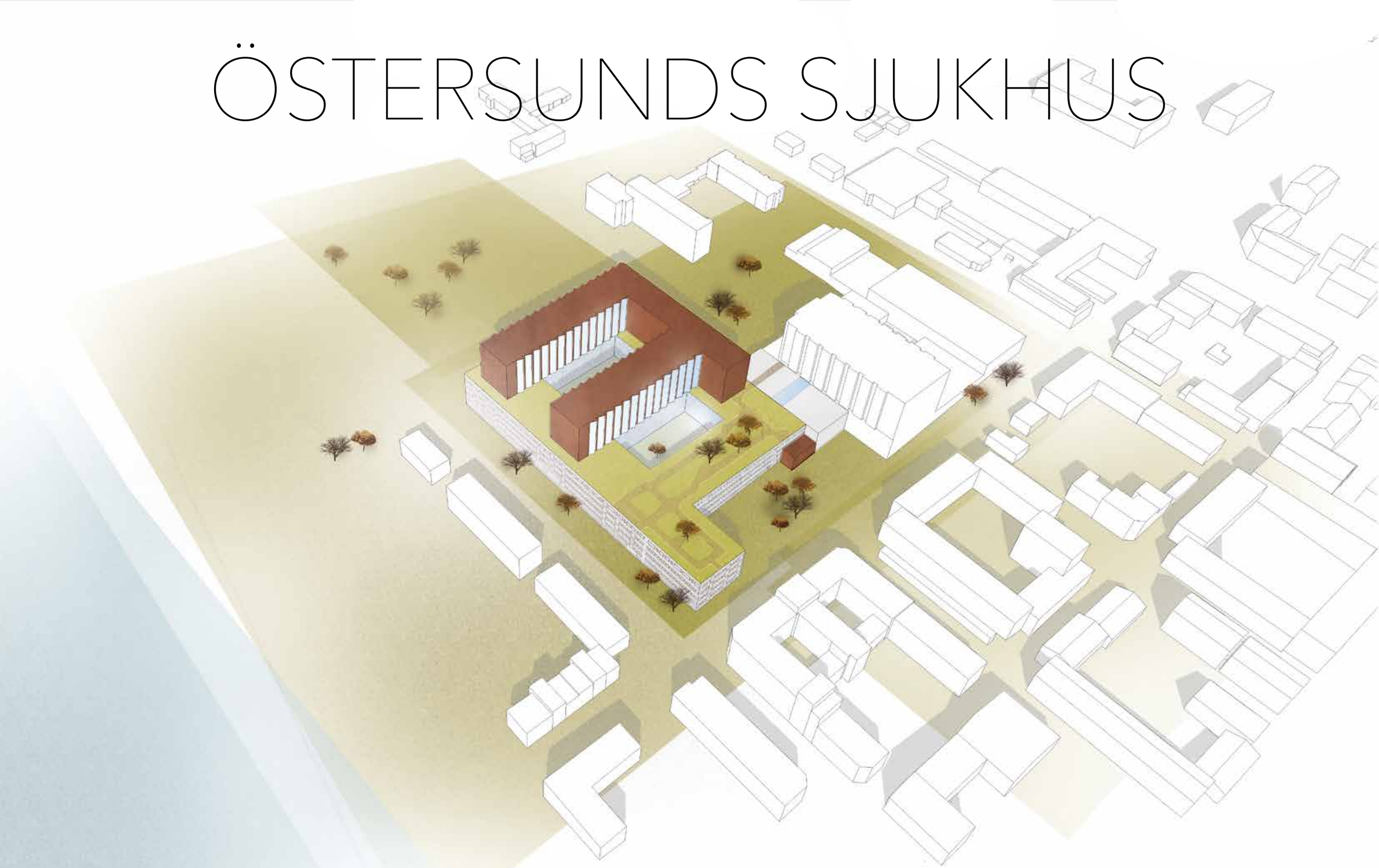
ÖSTERSUNDS SJUKHUS



CHALMERS ARKITEKTUR - FUTURE VISIONS FOR HEALTHCARE

THERES ANDREASSON PIA LARSSON HANNA STEGRELL

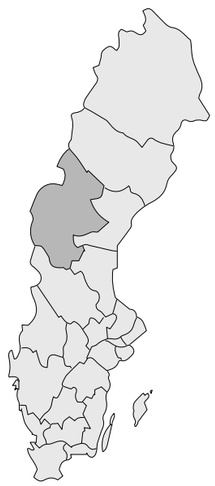
TABLE OF CONTENT

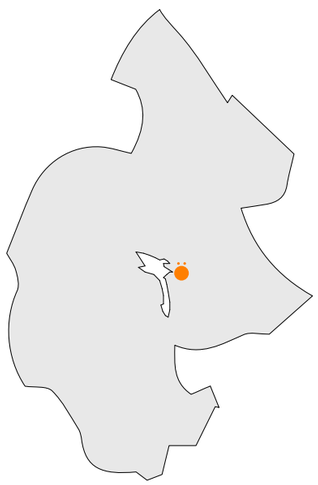
BACKGROUND

Background

The city of Östersund is placed by the lake Storsjön. The city is spread on the mainland and on islands in the lake. The hospital is placed in the city centre on the mainland, here the topography have a steep slope towards the lake, which provide great naturalistic views on the lake and forest in the surroundings from the hospital. This is a great quality to be taken into consideration while developing and redesigning Östersunds new hospital.

The situation of the hospital in the very city centre is beneficial for activities in the city centre, for people in Ostersund and for the hospital and can be even further developed.





Sustainability

This is some examples of how we have connected sustainability to our project. We have been working both with sustainability in terms of great flexibility within the structure yet with social sustainability aspects.

We have emphasized the connection to city in order make the integration of the hospital stronger. We considered this important because of its location in the city but also because of its important role for the whole county of Jämtland. It is a hub for health yet for socialization and plays an important part in the economical point of view in Ostersund.

The rationality and simplicity in our structure and planning from theme one is also a part of the sustainability aspect of the building, since it is easy to adapt to future changes. We have worked with three different units with different prospects when it comes to future flexibility and changes.

The first and most flexible unit is the what can be called the base unit. It is a quite solid and heavy unit, yet the very flexible grid system inside makes the spaces inside adaptable and changeable. This is reflected on the exterior on the structured system of windows at all levels except the uppermost where the flexibility of the unit is shown in a more porous row of windows.

The second part and least flexible is the ward unit which is situated on top of the base unit. This building part is adapted to functions needed in ward units and has got is shape from this. Yet generous single patient rooms make it flexible for a big range of various treatments.

The third unit is the entrance unit, which we considered be the part that probably will experience and/or be in need of architectural changes first. It is the unit welcoming the visitors and gives the first impression of what you will experience hence it should be kept in good condition transformed and updated due to changes within the hospital.

THEMES

Healthcare + Architecture

Theme one got us started reflect upon the role of a hospital and which elements we believed in - the ones we through our own perspective considered be the best for the healing process and the ones we wanted to integrate within the architecture. During theme one, we discussed constructively about new techniques and treatments within the hospital and whether they should affect the appearance of the architecture or not. Our architectural expression turned out to be based on the human perspective rather than future technical wonders.

We have focused on integrating nature in all levels due to the positive effect it has on the healing process but also because of its amazing quality of just being beautiful and its strength to create pleasant and recognizable spaces to be in. Integration of nature within the building, closeness to greenery and naturalistic views and also in the choice of materials in areas where patients moves is how we have been working with this.

During this theme we also got determinate to enhance rationality and simplicity within our hospital as a part of our architectural expression. The way rationality will improve the care in our hospital is through our application of it on the movement and corridor systems, the systematic and flexible grid system and placement of functions. This makes way finding, transportation of emergency cases as well planned appointments and also possibilities to future changes, due to updated techniques, very effective, which naturally have a positive effect on the recovery.

Future Proofing

– Structuralism, flexibility and generic space.

During the second theme we developed our grid system in order to meet our vision of a flexible building as well as the easy way finding. We developed an easy corridor system where you always can find your orientation in the city since all of them end with a great opening towards the outside. We orientated the movement for patients around atriums in the middle of the buildings, from where all outpatient units are reached. In these areas have wooden materials been used in order to differ them from other areas in the hospital. This gives the outpatient areas an individual expression and eases the reading of the building.

We divided the hospitals into different zones depending on functions and users to make the building more rational. Doing this made it possible for us to separate flows into the building.

We gathered the entrances in different categories to make it easier for patient and visitors to find the right entrances and areas within the hospital.

The emergency flows into the building are gathered in one area, traffic flows such as goods trucks and into the parking garage are on the opposite side of the building and in between those are the main entrance hall from where outpatients can reach all outpatient areas.

The flexibility aspect in our project is further explained in the part about sustainability which are two parts we see close connected.

Healing Architecture & Evidence-based design

Greenery and rich light flows are two qualities we have incorporated a lot in our project. These two things are connected to evidence based design and have both a positive effect on the healing process. There are also researches enhancing the importance of human contact and meetings for the recovery process, which is one reason our project not have a high technical focus since a lot of new and future inventions decrease the human and personal contact. We do not believe that is something beneficial for people staying in a hospital.

Nevertheless when it comes to evidence based design it is important to be critical. A lot of the new medical equipment entering the market reduces the meetings between patient and doctor but increases the safety for the patient in terms of hygiene and precision, the pros and cons have to be discussed.

It is also important to reflect upon from where reports on evidence based design comes from, from what group of people it has been developed, what culture, time and situations. We believe in natural features and its influences on the recovery, which is impregnate our project.

THE SITE

Today

1. Urban grid: The hospital is located in the city but disconnected from it. The city square is close by but the connection between it and the hospital could be stronger.

2. Axes: Streets that extend from the city square lands at the hospital site. A new building connects to these streets the hospital would become more connected to the city.

3. Greenery: There are many green spaces in the city, but the hospital site itself lacks greenery.

2.

1.

3.

THE HOSPITAL

Today

4. Today, the hospital has numerous entrances. It becomes hard for the patient and visitor to know where to go.

5. The corridor system is today very complex and it is very hard to orientate inside the hospital.

THE BUILDING

1. The west parts of the hospital is removed.

2. Existing building is mirrored. The courtyard brings light into the building.

3. Another courtyard is created when a new building volume is added. An entrance hall is placed between new and existing structures and connects the two.

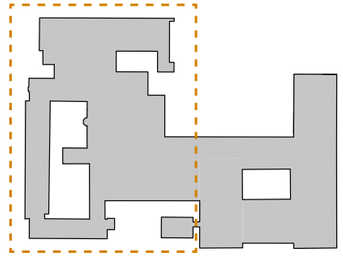
4. Entrances for patients and visitors are gathered. The main entrance is moved from Kyrkgatan to Fältjägargränd. Emergency, delivery and ambulance entrances are reached from Kyrkgatan. Here they are easy accessible.

5. The streets from the city square are connected to an entrance square on the hospital site. They extend through the entrance hall and connects to the north side of the hospital, the cemetery and nature beyond.

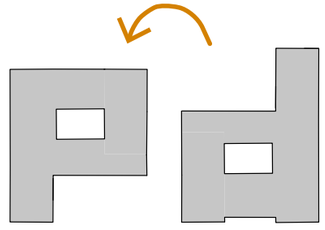
6. The main corridors are located along the courtyards to simplify way finding.

7. Greenery is created on many levels - around the building, on the courtyards and on the roof.

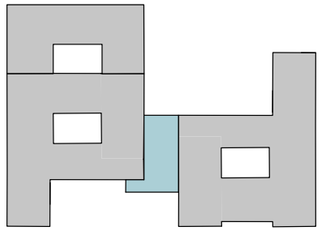
8. On the sunny south side of the hospital, seating areas are arranged by the entrance and the café has a serving area on this side. The roof terrace also faces south.



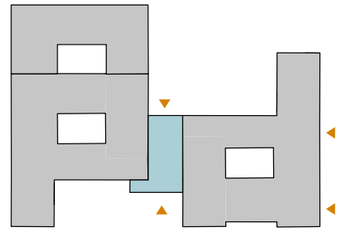
1. TODAY



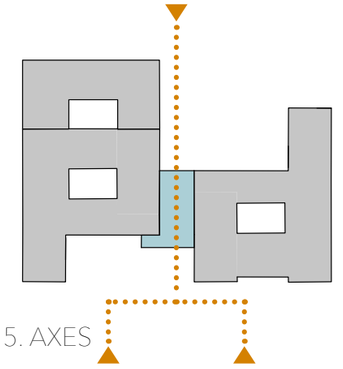
2. MIRROR



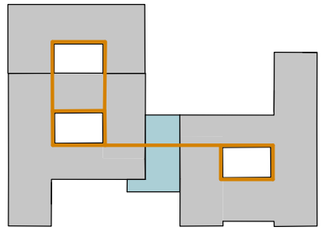
3. ADD VOLUMES



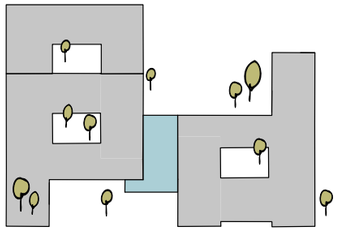
4. ENTRANCES



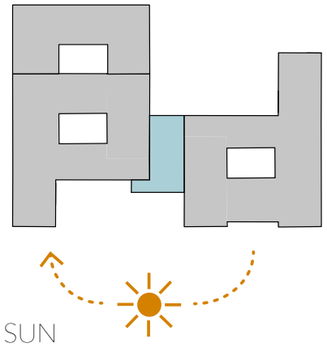
5. AXES



6. WAY FINDING



7. GREENERY



8. SUN

SITEPLAN

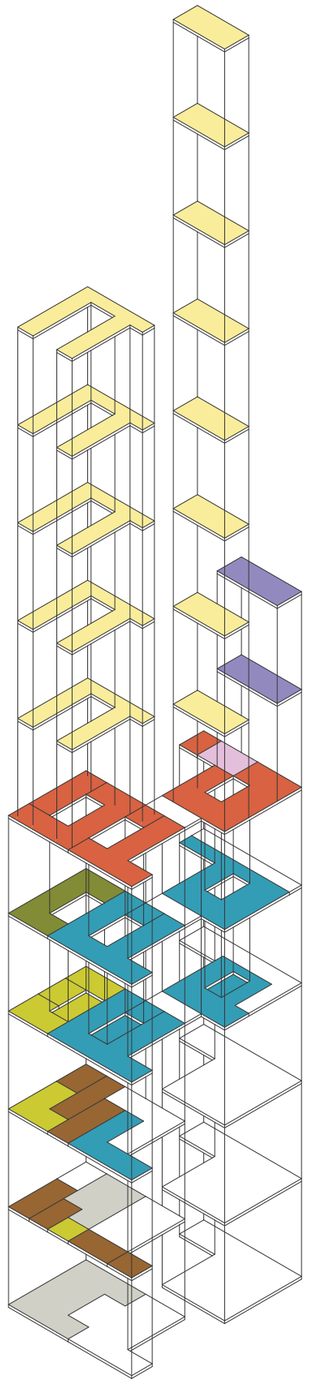
1:1000

PROGRAM

When arranging the program, level 6 has been the main floor. It is the "hot floor" of the hospital which means that all emergency functions are placed on this level - emergency, delivery, operation, x-ray and ICU. To facilitate a quick and easy trauma flow the floor level is continuous on this level.

On the levels below and above there is a difference in floor levels in the new and existing building.

Wards are placed above level 6 and outpatient departments below.



WARDS
INFECTION
DELIVERY
"HOT FLOOR"
LABS
OUTPATIENTS
STAFF
LOGISTICS
TECHNICAL

9-14	Wards
8	Wards, infection
7	Wards, infection
6	Emergency, delivery, operation, x-ray, ICU
5	Outpatient, blood bank, labs
4	Main entrance, kiosk, pharmacy, café, outpatients, staff entrance, doctors lounge, staff canteen
3	Education centre, changing rooms, gym, laundry, goods, outpatients
2	Kitchen, sterile central, hospital pharmacy, mortuary, technical
1	Technical, parking

AREAS sqm

EXISTING BUILDING TODAY	90000
REMOVED AREA	43000
EXISTING BUILDING REMAINING	47000

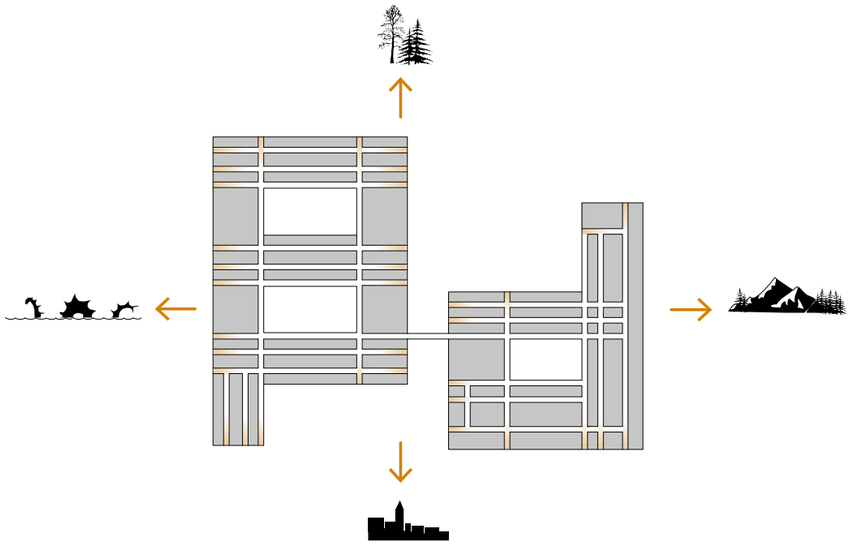
DEVELOPED PROGRAM

WARDS	31600	
INFECTION	500	
DELIVERY	1000	
"HOT FLOOR"	17100	
	EMERGENCY	7600
	OPERATION	4100
	X-RAY	3700
	ICU	1700
OUTPATIENTS	24100	
STAFF	6900	
(Dr Lounge, kitchen, research/education, changing room, gym)		
LOGISTICS	4500	

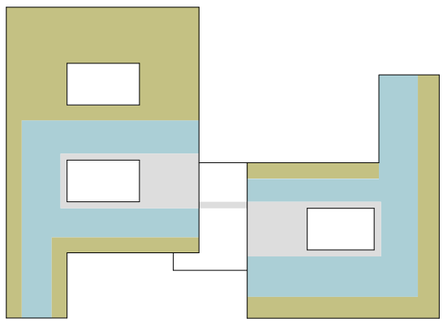
TOTAL NEW BUILDING 83500

TOTAL HOSPITAL (new and existing) 130500

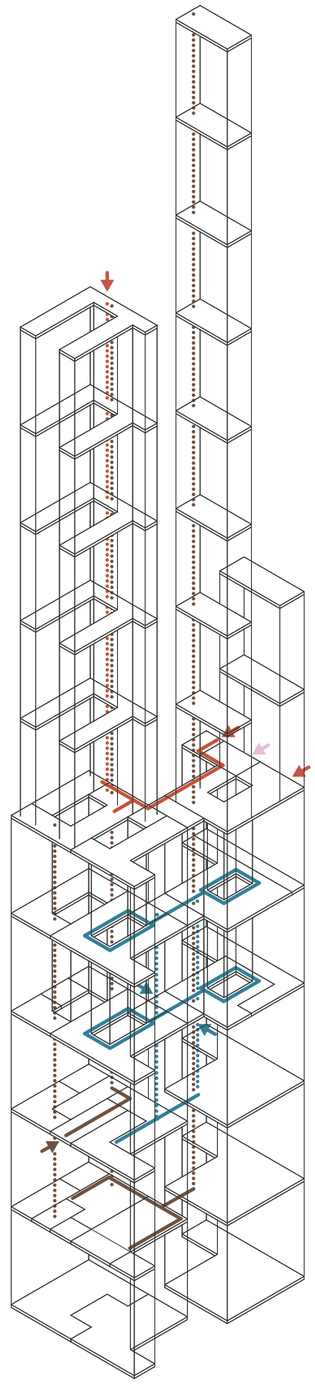
FLOWS



Corridors are extended to the facade. Windows in the end of the corridor create views which makes it easier to orient inside the building.



Flows are separated. Public movement (grey) is located along the courtyards. Outpatient departments (blue) are reached from the public corridors. Staff (green) have a separate flow closest to the facade.



EMERGENCY

OUTPATIENTS

LOGISTICS

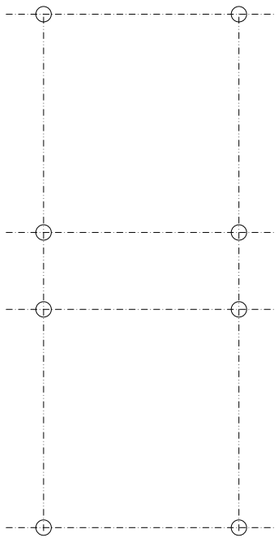
STRUCTURE

Grid system

The construction has a grid system of 9.4 m x 10.5 m / 3.5 m. The grid can host many different generic room sizes, from one large to many small, which suits the hospital functions. One large room can be used as an operating theatre while a small room can be used as an expedition.

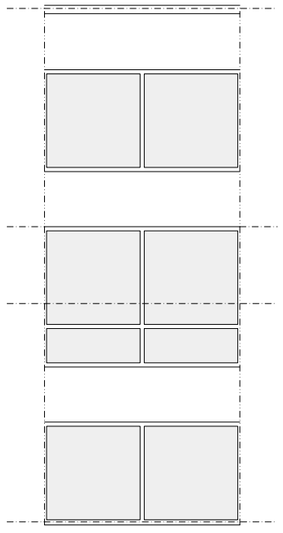
The windows have been placed to allow these different room sizes but are also prepared for future changes. Walls can attach to the facade in many different ways.

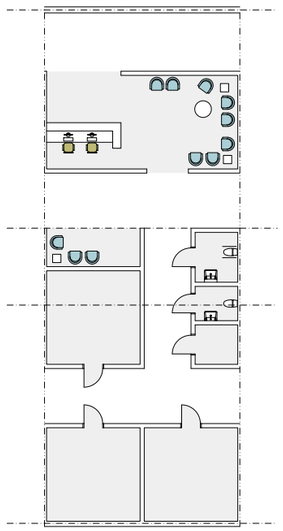
Floor heights in the new building are adjusted to handle installation requirements.
"Hot floor" 4.8 m
Outpatient 4.5 m
Wards 4.2 m



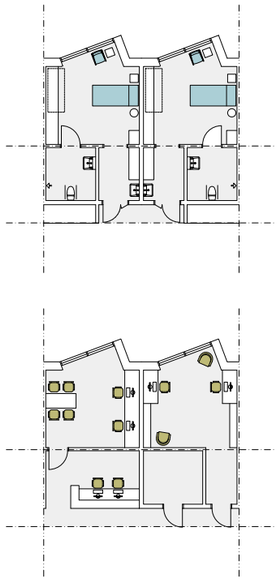
Grid pillar system
9.4 x 10.5 / 3.5 meters

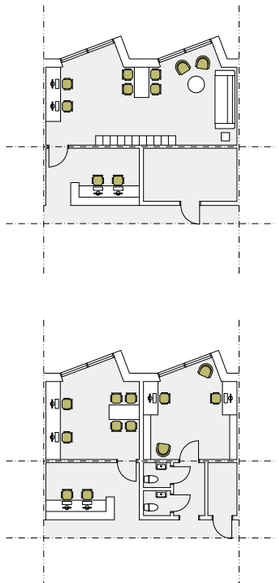
Outpatients



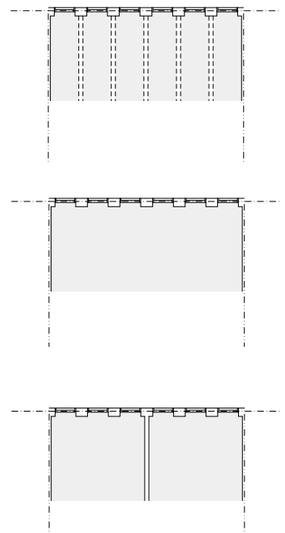


Wards





Windows

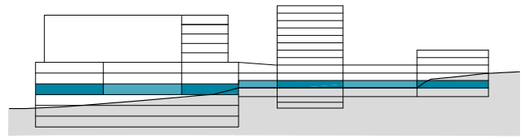


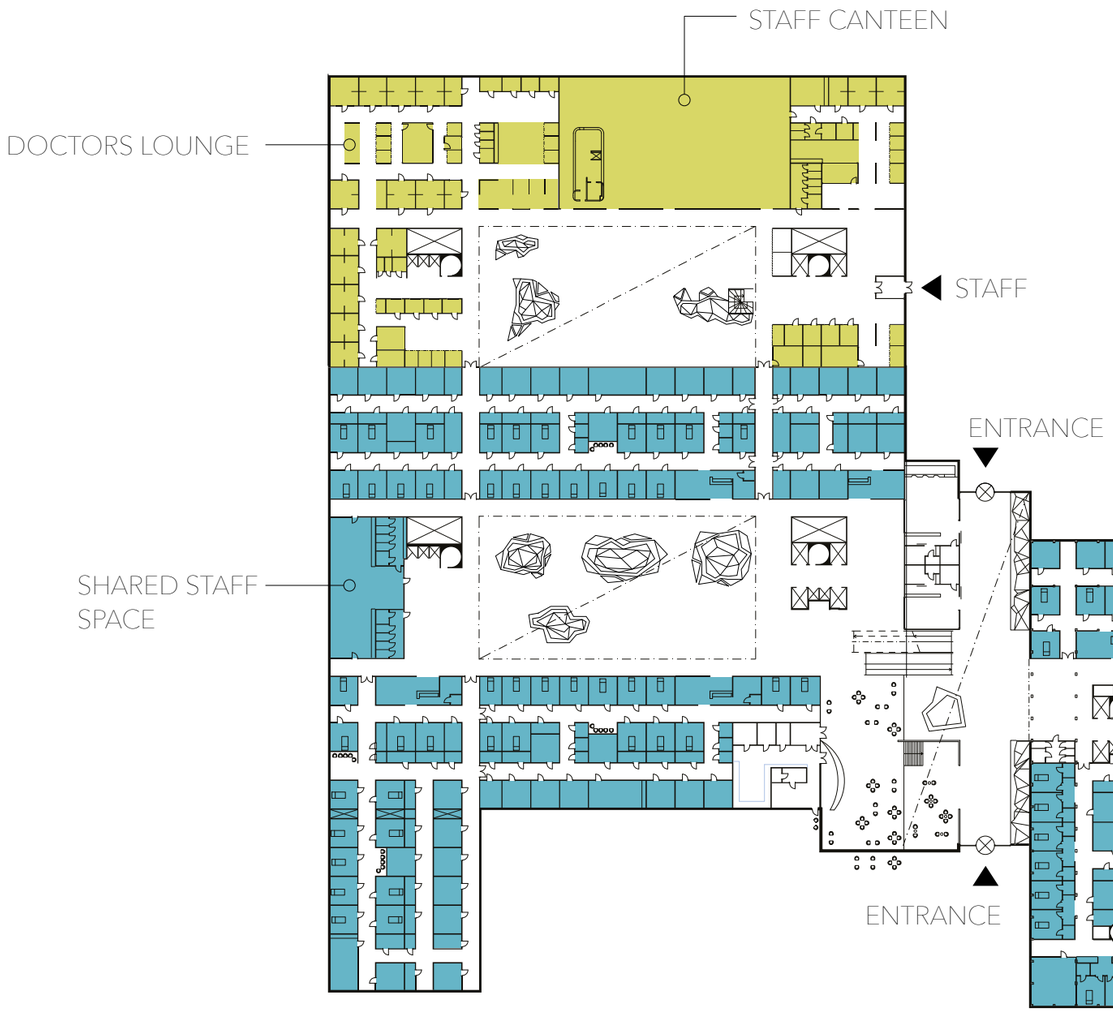
View towards new main entrance

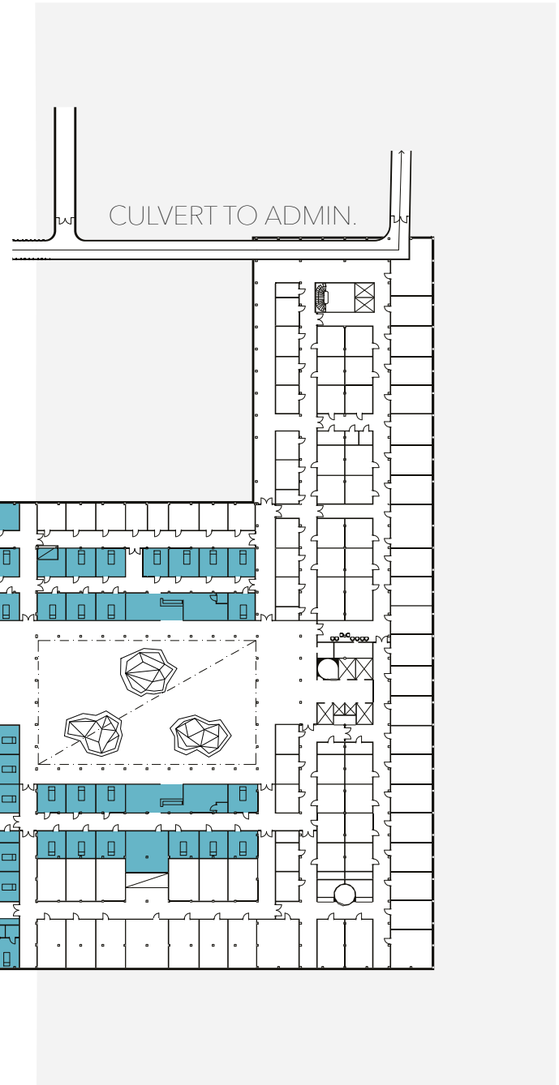
LEVEL 4

Main Entrance
Outpatients

1:1000

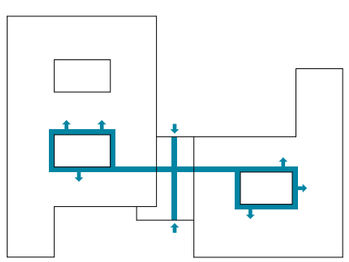






STAFF

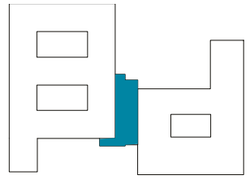
OUTPATIENTS

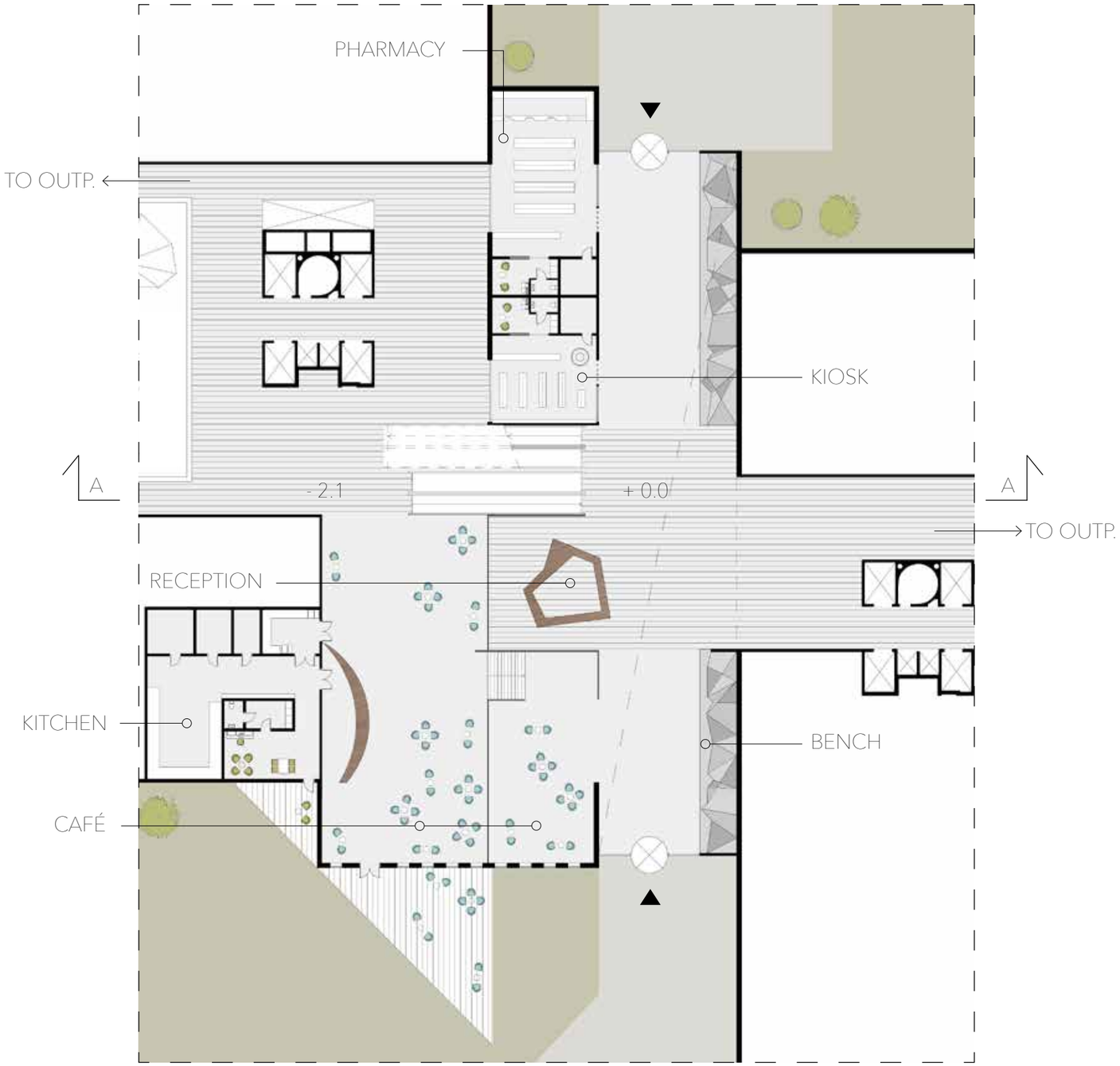


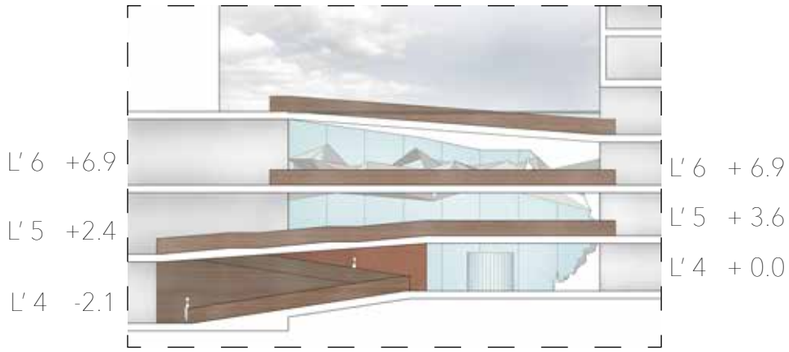
0 20 40 60m

LEVEL 4

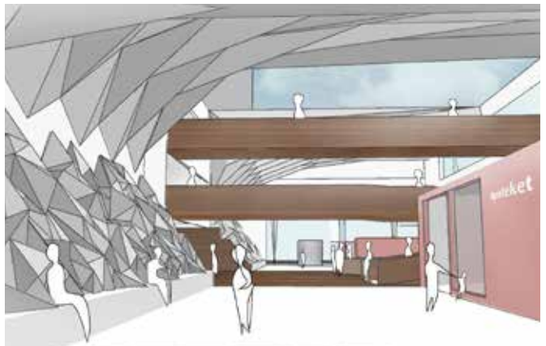
Main Entrance Hall 1:400







Section A-A through the entrance hall with plus levels, starting from level 4 in existing building



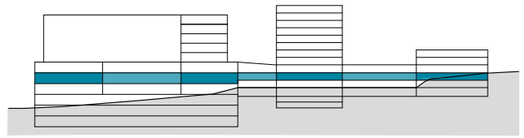
View from north main entrance.

Entrance sculpture made of prefabricated white metal sheets.

0 10 20 30m

LEVEL 5

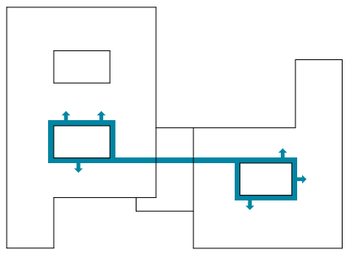
Outpatients 1:1000



LABS

OUTPATIENTS

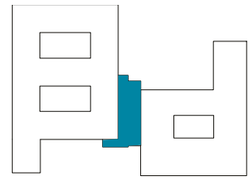
INFECTION

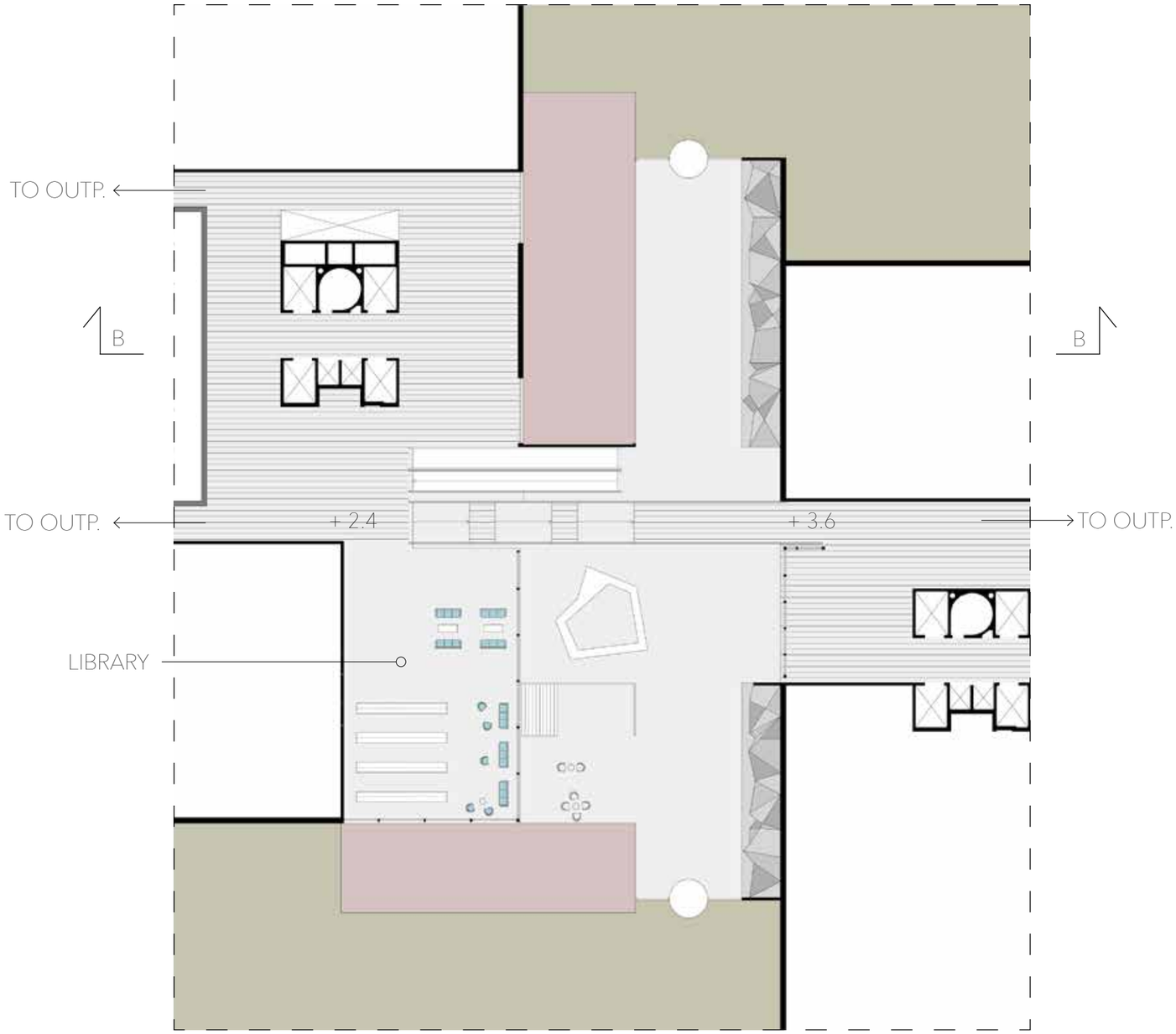


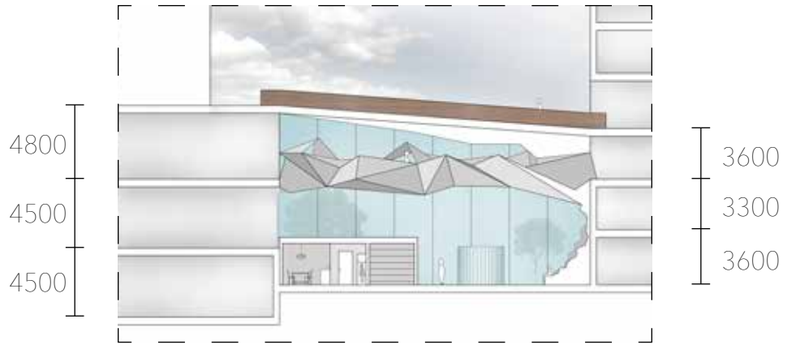
0 20 40 60m

LEVEL 5

Main Entrance Hall 1:400





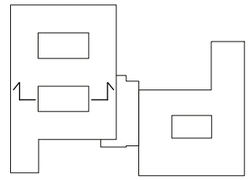


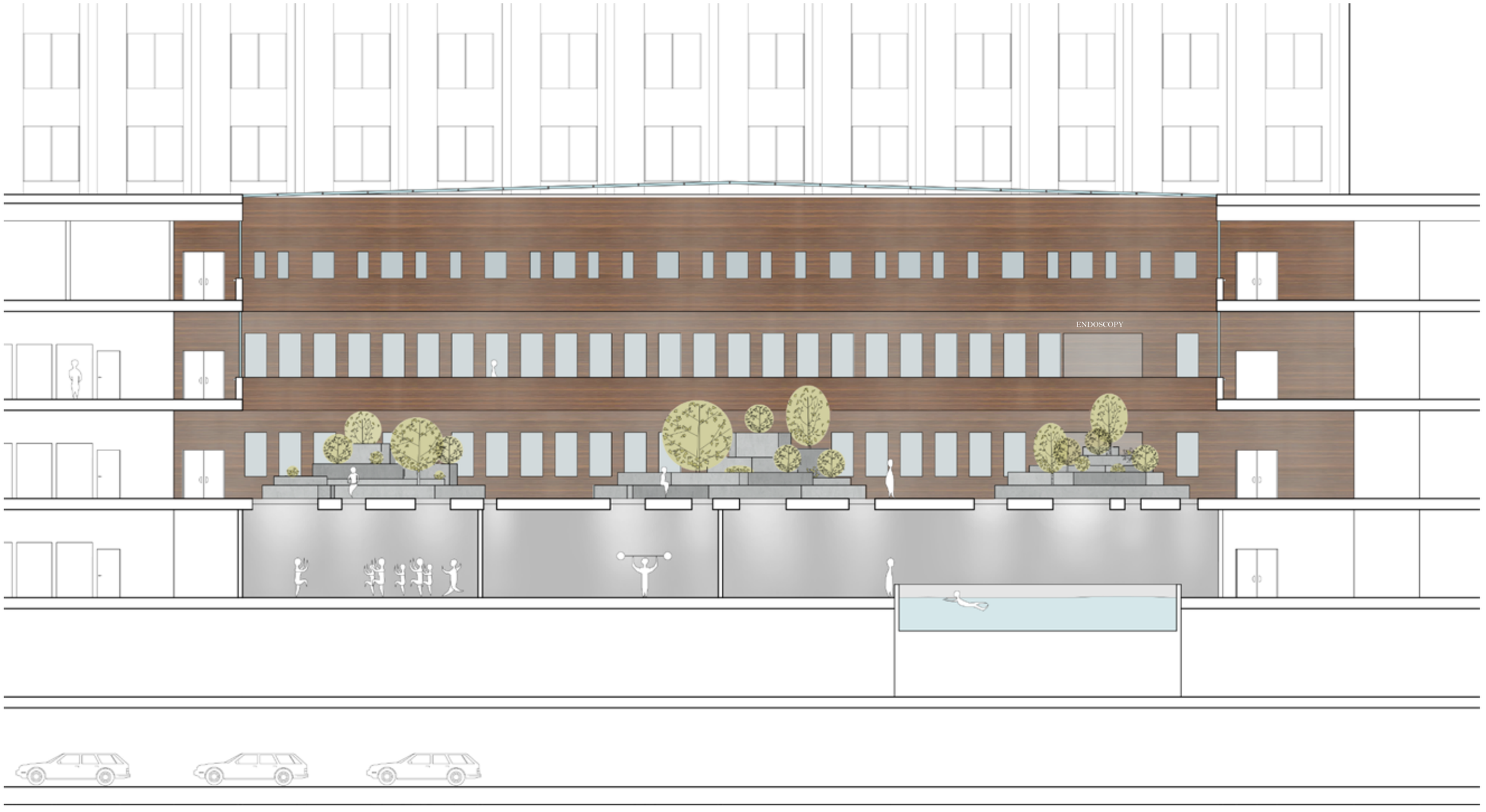
Section B-B through the entrance hall with floor to floor heights

Reference, entrance sculpture: Bloomberg Pavilion by Akihisa Hirata Architecture Office

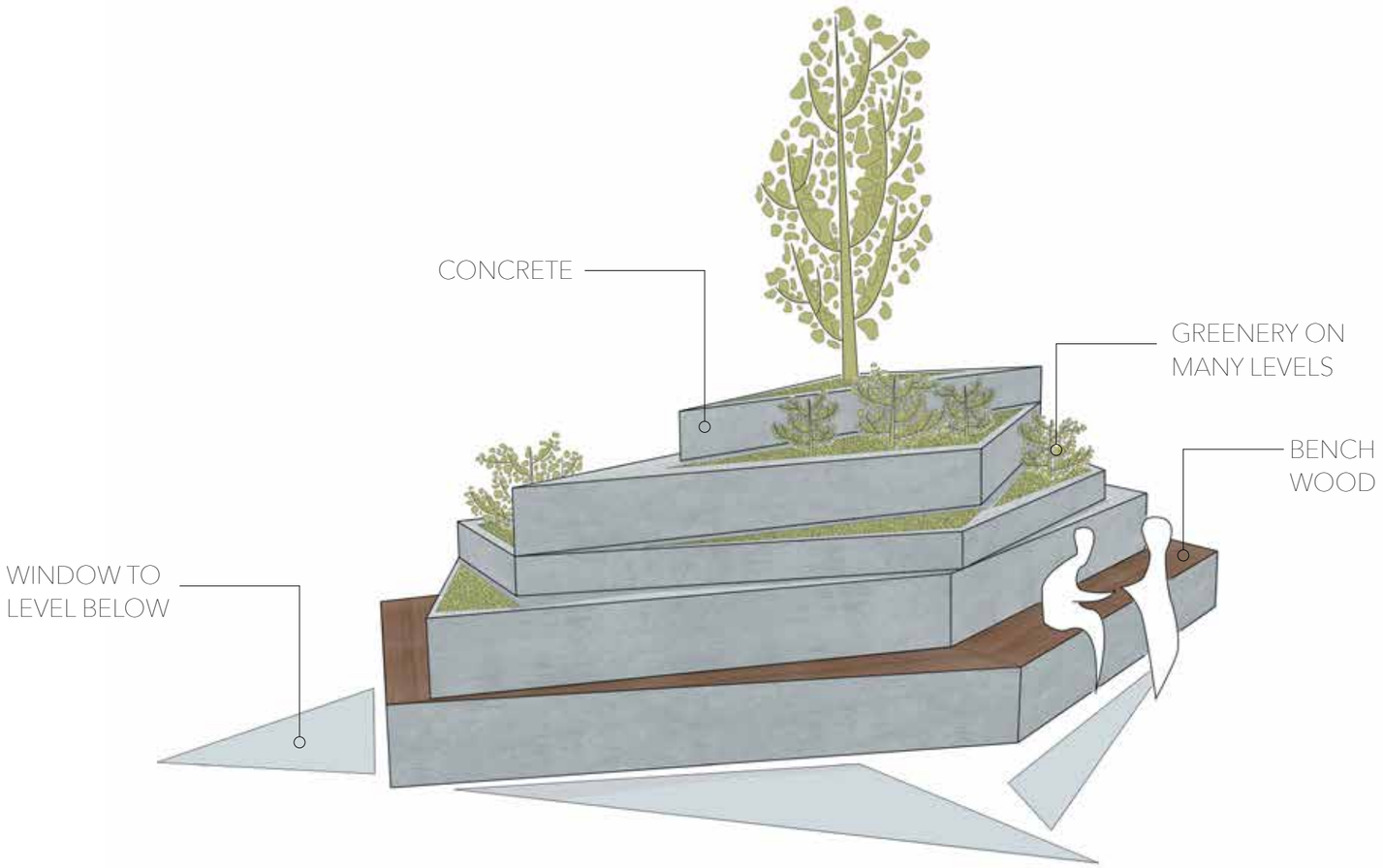
SECTION

New courtyard 1:200





0 5 10 15m

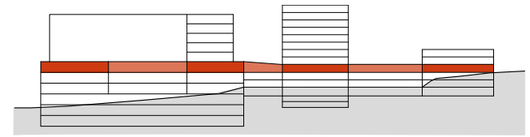


Seating sculpture on the courtyards

LEVEL 6

"Hot Floor" 1:1000

The more technically demanding functions are placed in the new building where the floor to ceiling height is more generous.



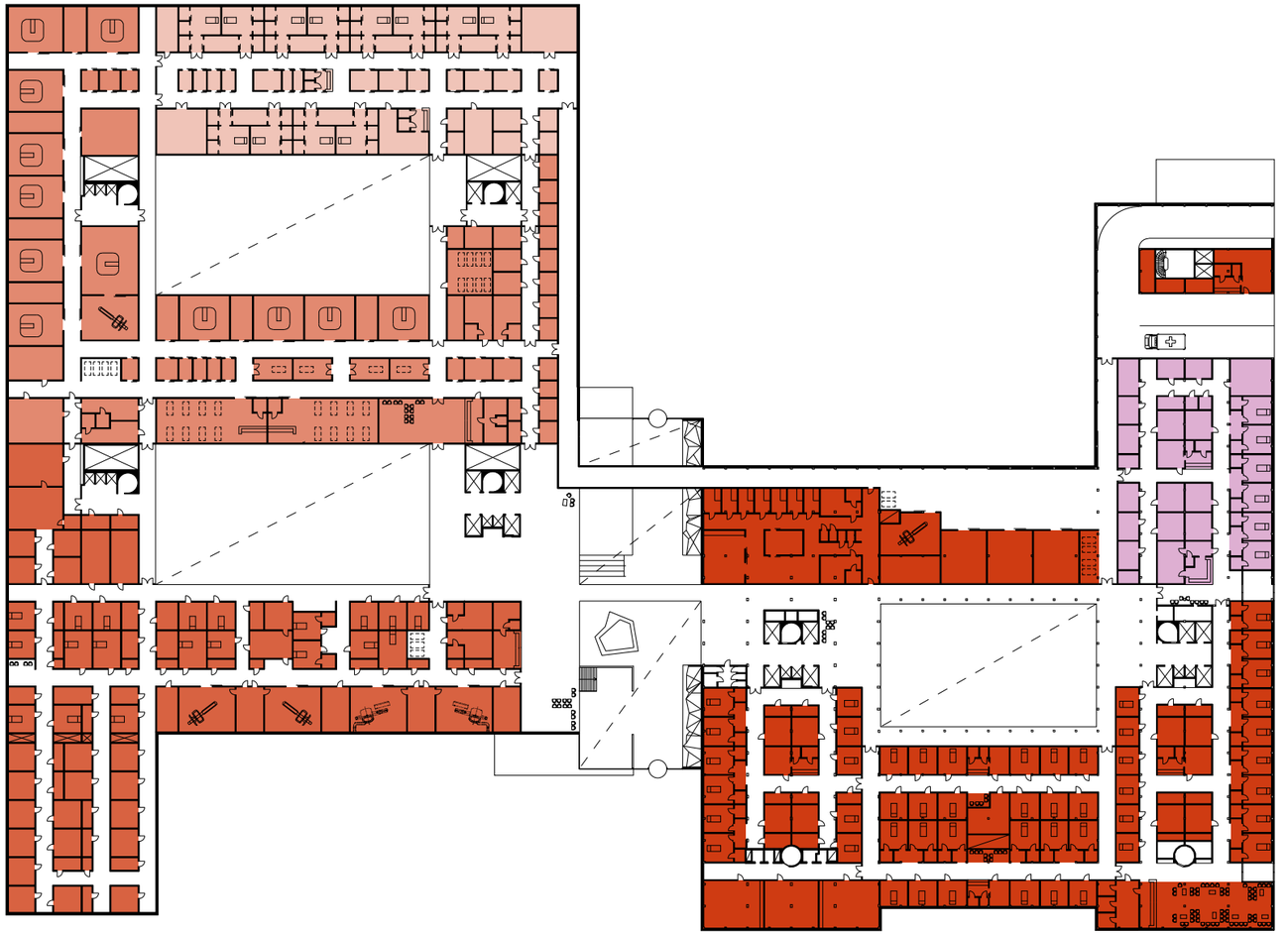
EMERGENCY

X-RAY

OPERATION

ICU

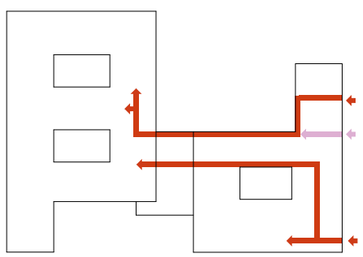
DELIVERY



AMBULANCE

DELIVERY

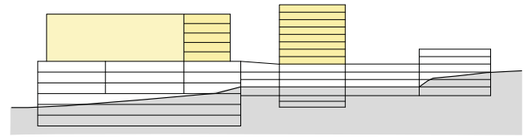
EMERGENCY

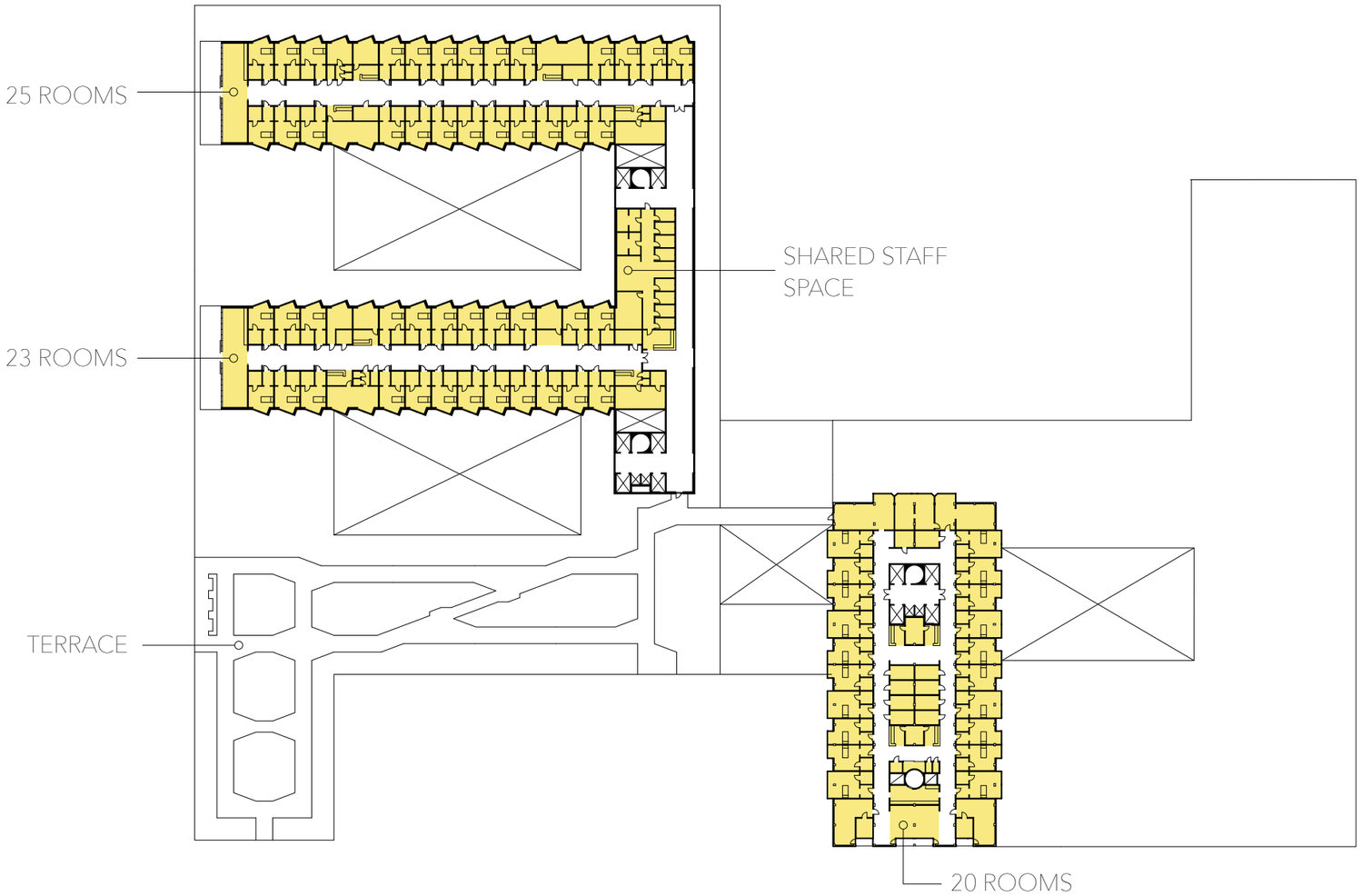


0 20 40 60m

LEVEL 7-

Wards 1:1000





WARDS

0 20 40 60m

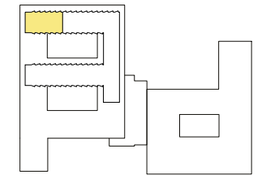
View towards day room

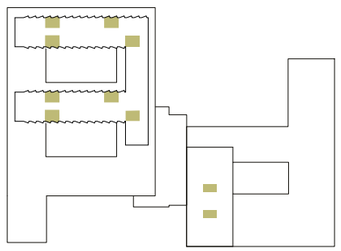
WARD

Patient centred care 1:200

Team stations create a close relation between staff and patient.

Team stations are placed opposite to each other to encourage cooperation. Each team station has adjacent office space and support functions. Storage facilities are located in the corridors. Additional shared staff space is located between the wards.





TEAM STATIONS

0 5 10 15m

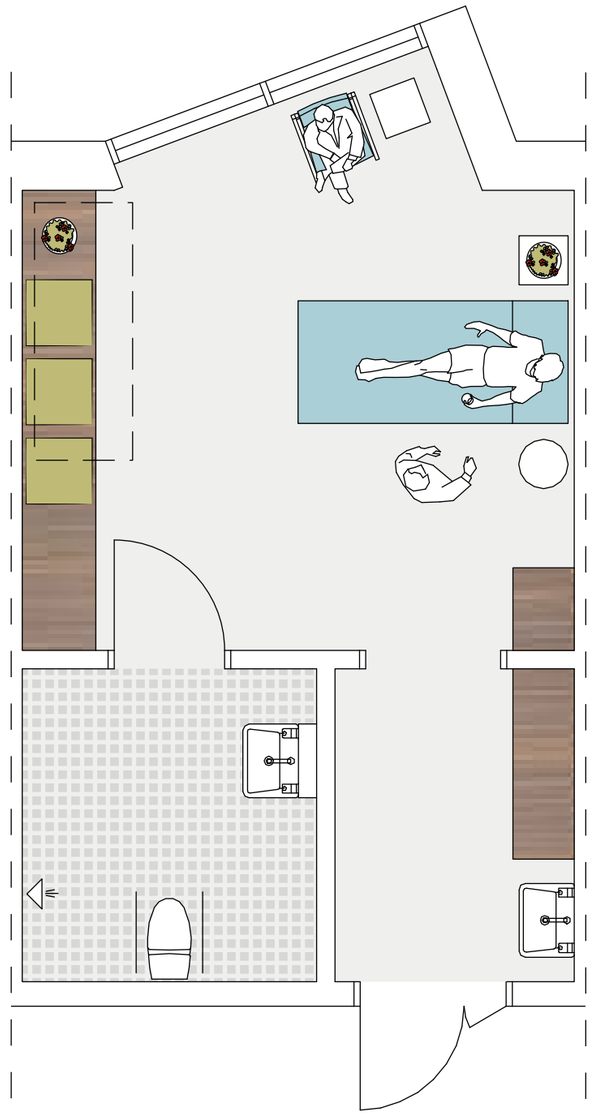
WARD

Single Patient Room 1:50

All ward rooms are single patient rooms. The facade is angled to create a better view over the lake and nature. From the bed, the patient has a visual connection to the corridor which creates a connection to the movement outside of the room. Each room has generous space for relatives and an extra bed can be brought into the room so that a relative can stay over.

Day rooms are located in the end of each ward with its own terrace.

View in ward room

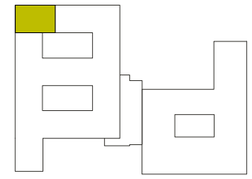


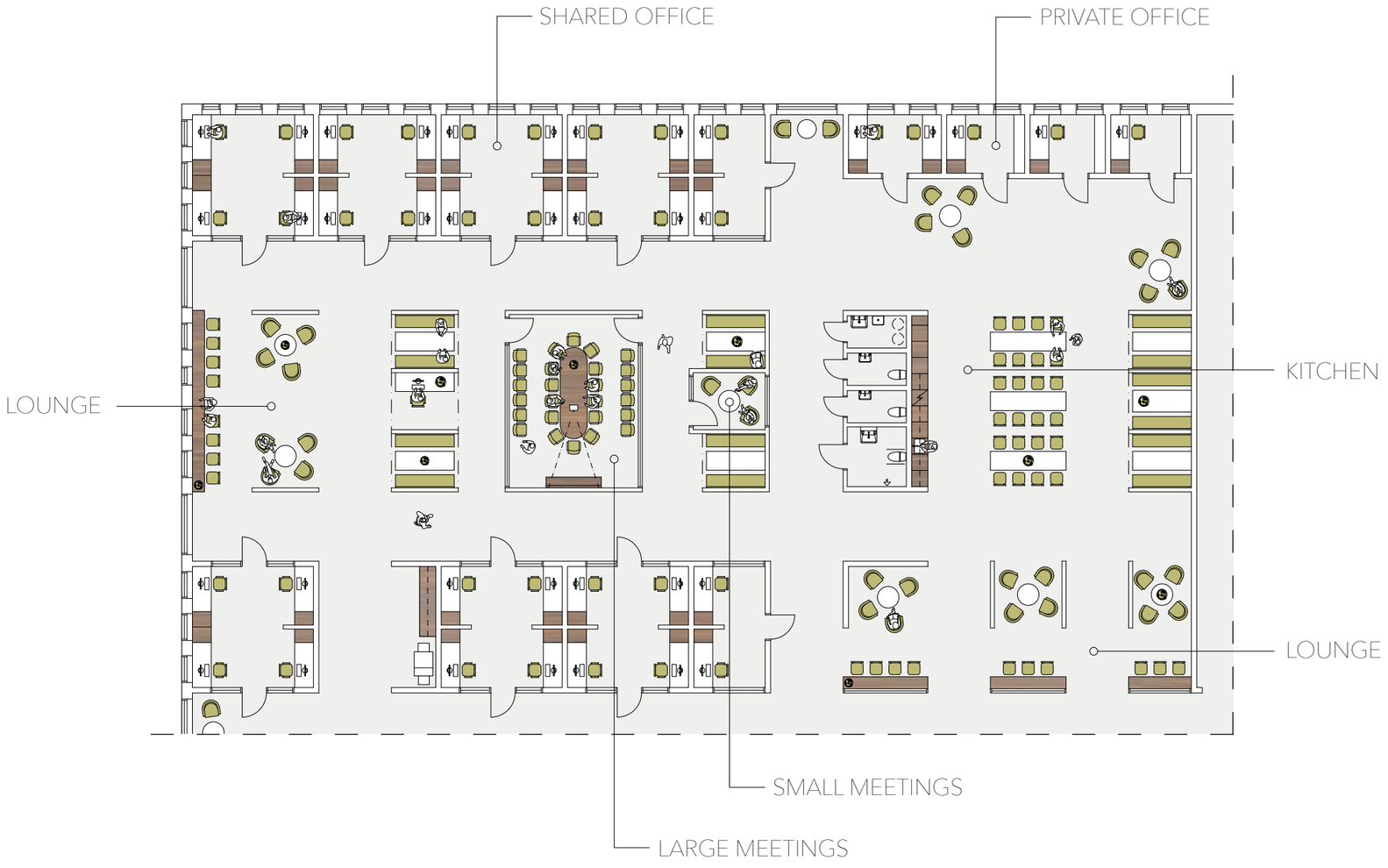
LEVEL 4

Doctors Lounge

1:200

A doctors lounge is located at level 4. Different kind of rooms creates space for many types of work. There are small and large meeting boxes, single offices, shared offices, lounge space and kitchen.

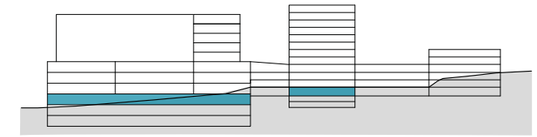




View over doctors lounge

LEVEL 3

1:1000

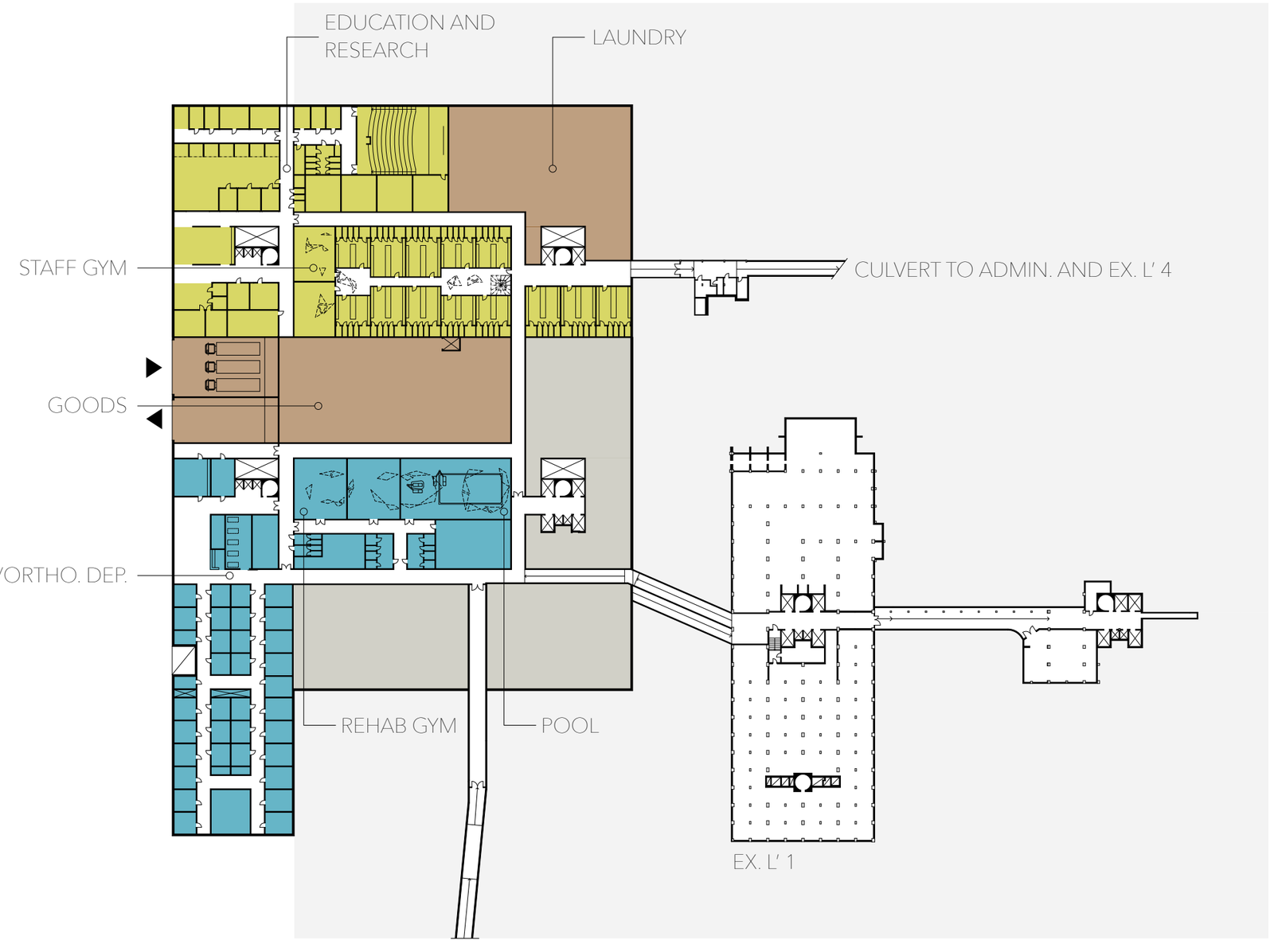


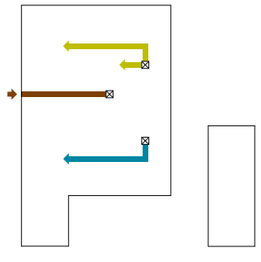
STAFF

OUTPATIENTS

LOGISTICS

TECHNICAL





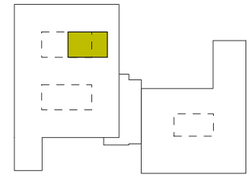
0 20 40 60m

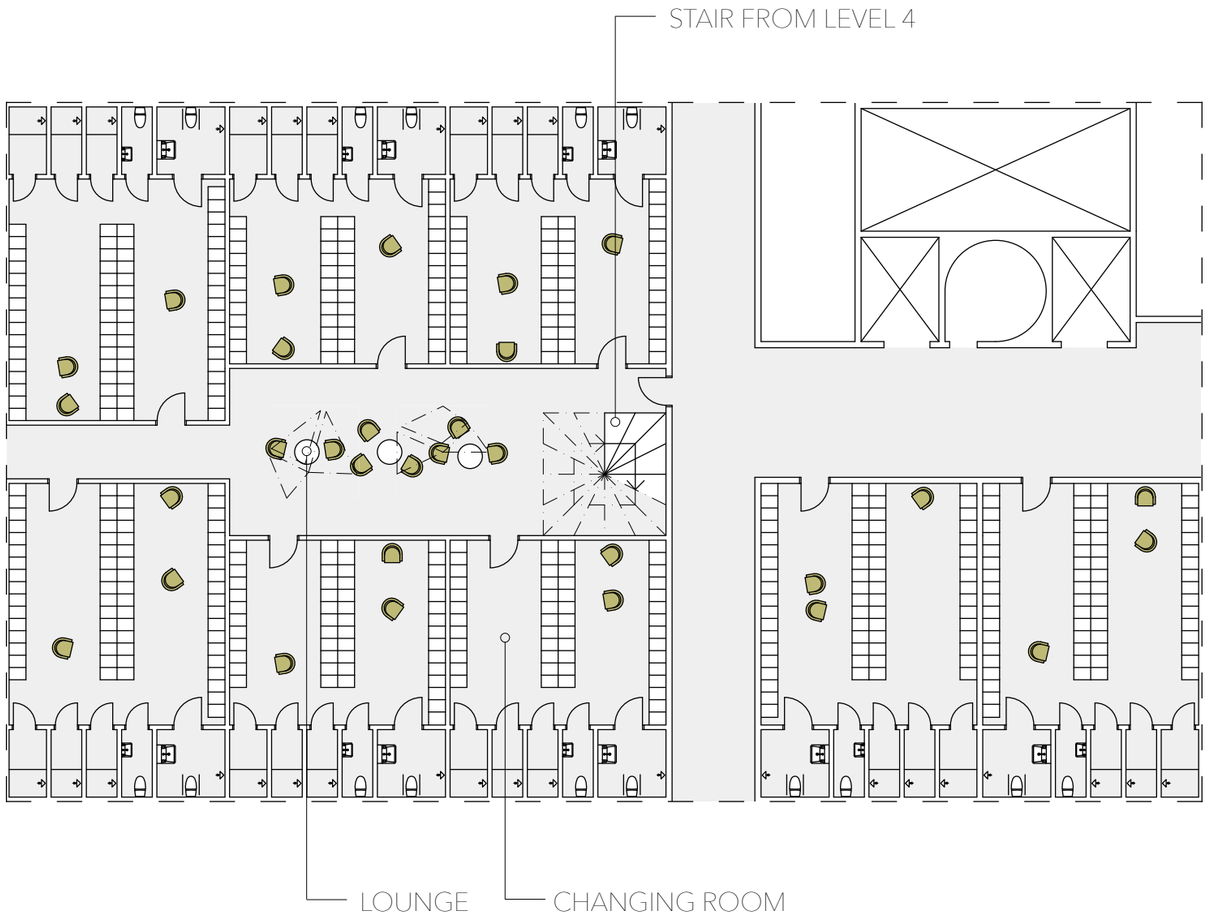
LEVEL 3

Changing Lounge

1:200

Changing rooms for staff is located on level 3, one level below the entrance. A stair from the staff courtyard connects to the changing room area. Lanterns allows light to reach the lounge space and the staff gym.





View over changing room lounge

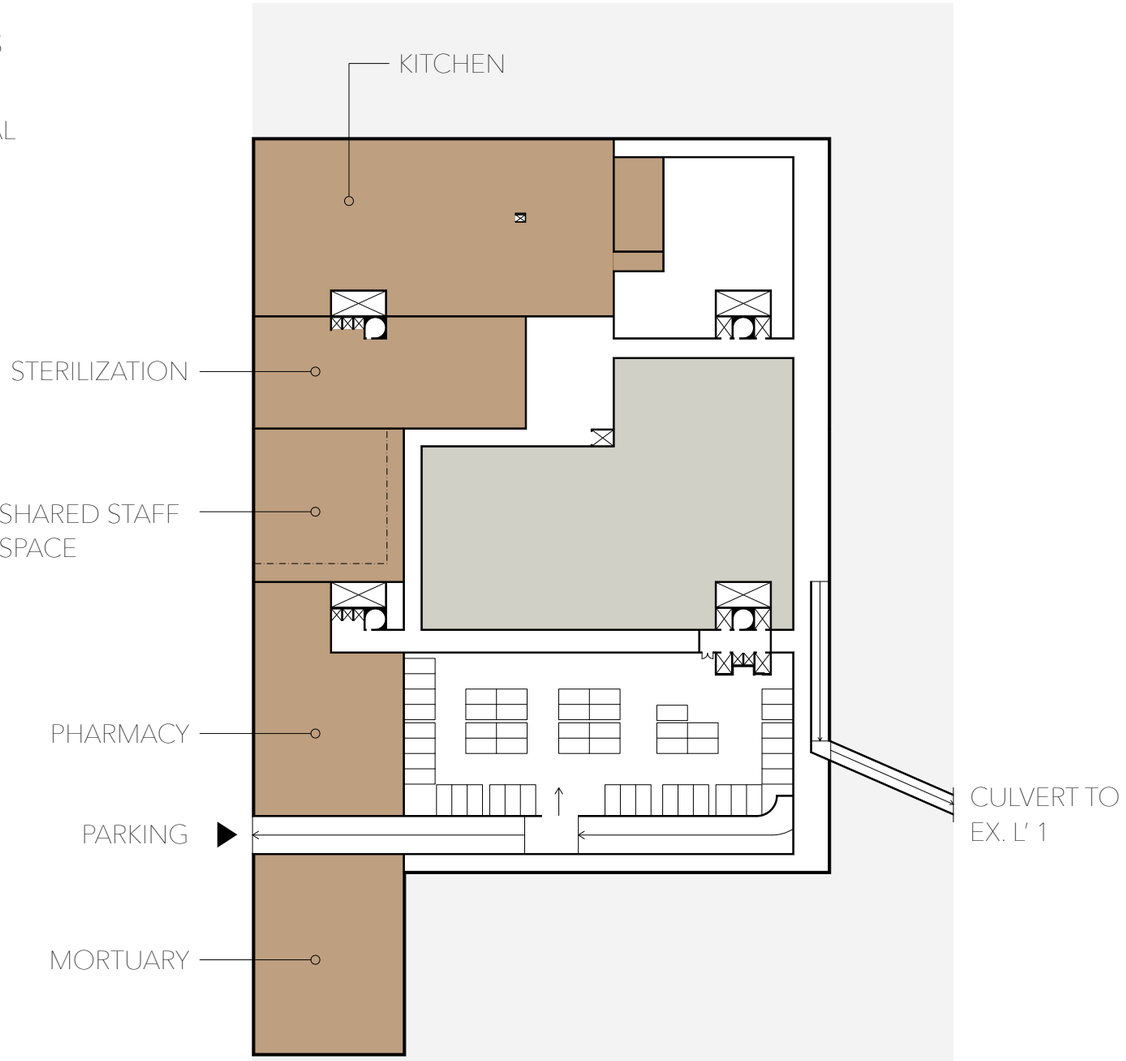
0 5 10 15m

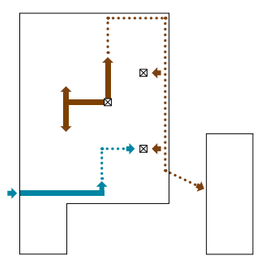
LEVEL 2

1:1000

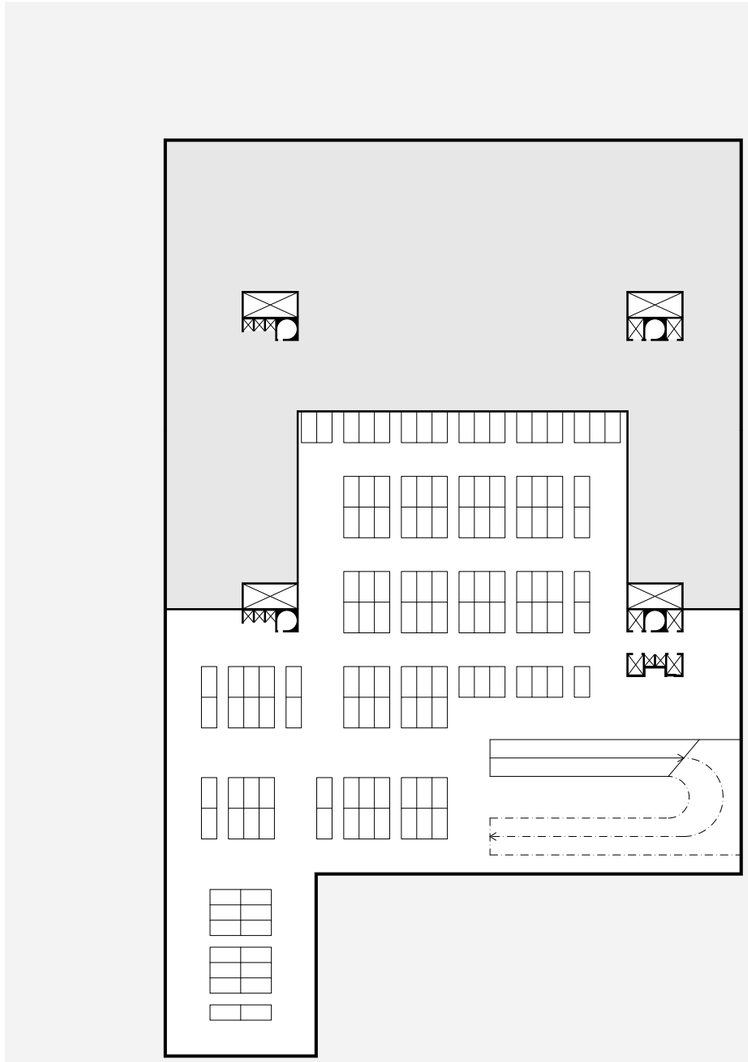
LOGISTICS

TECHNICAL

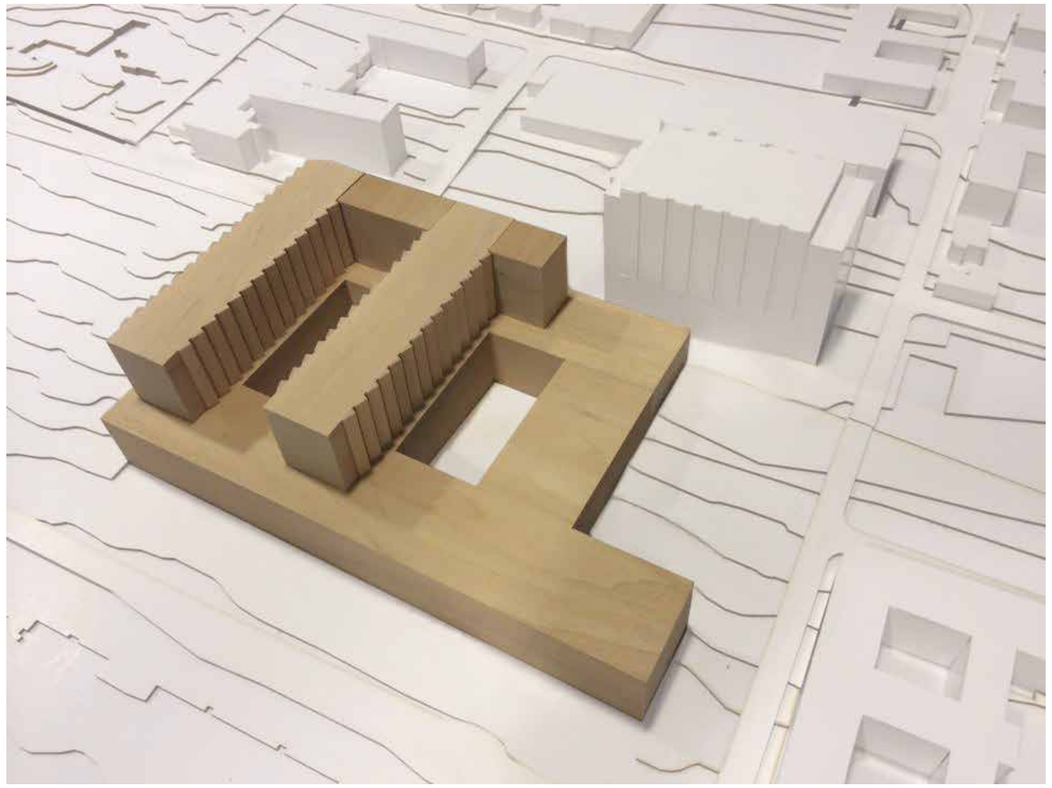




LEVEL 1



0 20 40 60m



Model photo

ELEVATION

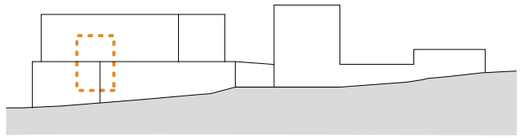
1:1000

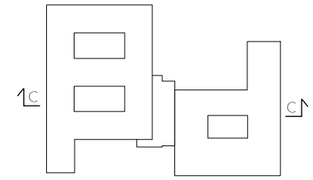
ELEVATION WEST

ELEVATION SOUTH

SECTION & FACADE

1:1000





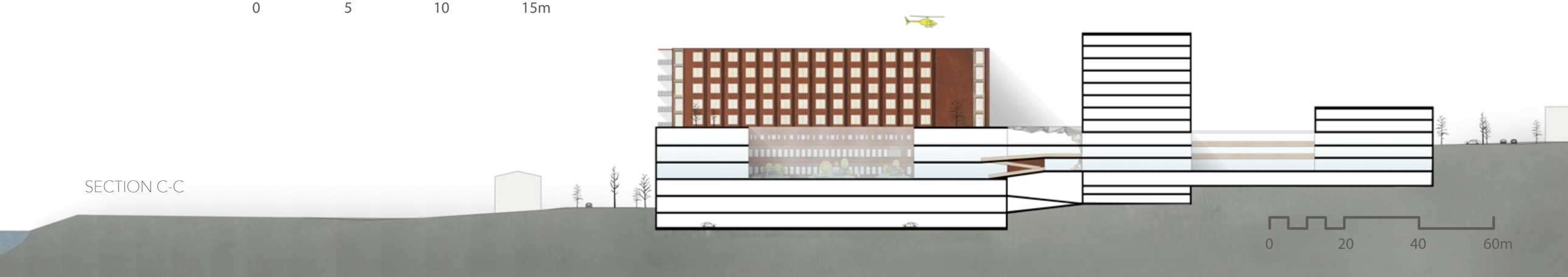
1:200

0 5 10 15m

CORTÈN
The ward units on top, as well as the boxes added in the entrance spaces and openings to the garage and the loading dock, have porous corten material in order to make the upper part of the building lighter than the heavy base and to correspond to the color scale of the old structure.

CONCRETE
The base unit has a light concrete façade. This gives the building a steady base and an urban expression.

WOOD
Wooden panels on the façade marks out the extended corridors. It breaks up the heavy base in smaller units and gives the façade a smaller scale.



SECTION C-C

0 20 40 60m