



Universitetssjukh

[FRISKHUSET]

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ARK263
Future visions for healthcare, housing and work 3:
Healthcare architecture
2019

INTRODUCTION

The task was initiated on behalf of Region Skåne to make a design proposal for future expansion of the existing hospital area in Lund, a city in southern Sweden. The expansion includes high technical hot floors, wards and a women & neonatal department on a 32 500 sqm long and narrow site.

The existing hospital area has a characteristic cultural context with origins mainly from the 60's and 70's. Today, there are buildings on the site planned to be demolished for the hospital expansion. The site has potential to connect to LTH, the link of knowledge located in the east and the city centre located in the south. A new tramline provides good public transportation to the site. However, this creates a magnetic field with a radius of 25 meters in which no high technology equipment can be placed. In addition, there are slopes on the site reaching both south-north and west-east.

Our assignment was to design this new building with these facilities connecting to each other and with connections to surrounding buildings. The project adapts on a bigger scale, on masterplan level, and smaller scale, specifically looking into the main entrance, thorax surgery and one general ward.

Our ambition is to create a building that adapts and connects to the existing buildings and with the city centre. Furthermore, the aim is to create a healing environment for the patients to be able to recover faster, good working environment for the staff and welcoming environment for the visitors. The focus is also to create recreational areas, both indoor and outdoor, for all users and to create a sense of integrity within the building. This is Friskhuset!

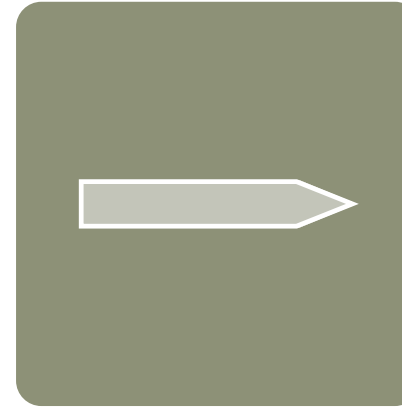


SITE ANALYSIS



DESIGN STRATEGIES

BRIEF AND LOGISTICS



HOLISTIC WAYFINDING



SHORTENING DISTANCES

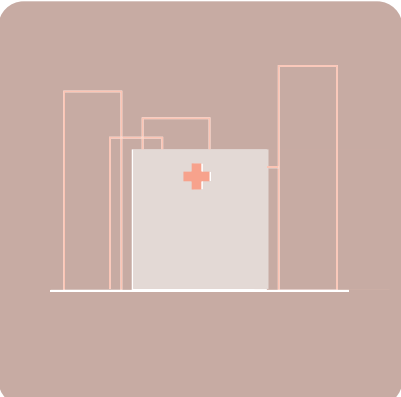


STAFF INCLUSION

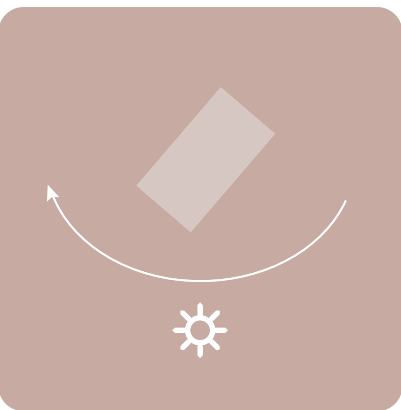
SITE AND CONTEXT



HUMAN CENTERED ARCHITECTURE

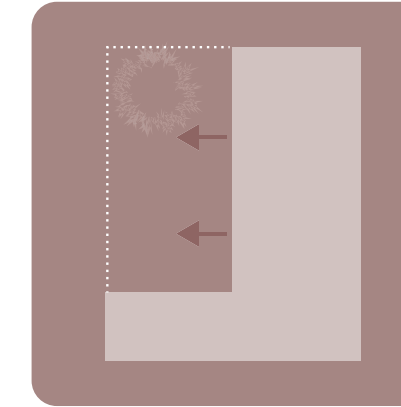


INTEGRATION WITHIN THE CITY

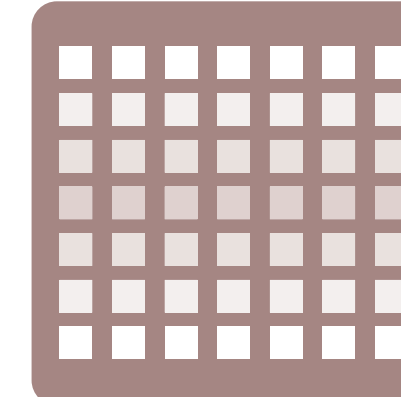


ADAPTION TO THE NATURAL CONTEXT

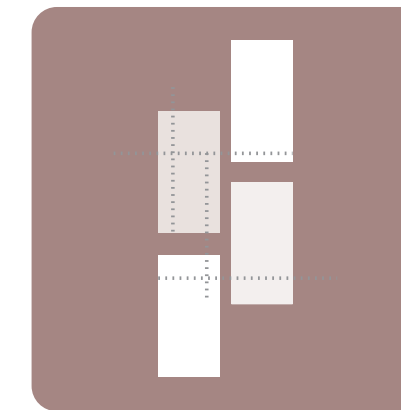
SUSTAINABILITY & FUTURE PROOFING



SPACE FOR THE FUTURE



GRID SYSTEM



POSSIBILITY OF DIVISION

HEALTH PROMOTIVE ARCHITECTURE



WALKABLE AND BIKE-FRIENDLY



PATIENT OUTLOOK

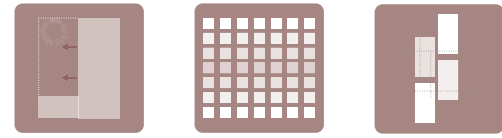


RECREATIONAL AREA

SUSTAINABILITY AND FUTURE-PROOFING

Apart from patient safety, which is an obvious priority while designing a hospital, we believe that sustainability and future proofing should be the palpable aspect of the process. In our concept we can distinguish four ways of how we implement sustainability and future-proofing.

BUILDING AND CONSTRUCTION



Hospital is a constantly changing structure and it is crucial that building is flexible and can adapt to the rapidly changing and expanding demands. Our proposal is based on a regular grid (4x4m) which makes it easier to add, change and renovate. Construction based on the grid is also easier and faster to build, that would cut the building process. We decided to reduce the density on the south part of the plot to provide space for future extension if needed. Regular grid made it possible for us to design the building that could be divided in case of an epidemic. Each department could work separately, which might be needed in the post-antibiotic era. Each part of the proposal has a different approach to future changes. The dense hot floor part is elastic for the future changes within the hospital, for example, changing different departments or equipment. The less-dense part on the south, with wards and the patient hotel, is more general making it simple to transform the building to some other functions (student housing, restaurant, shops, etc.)

BROAD BIODIVERSITY



We introduce many green spaces in both parts, e green rooftops collecting water, ground floor courtyards and green terraces for recreational areas. It is evidenced-based that providing the view from the patient's room and recovery areas reduce the time of recovery and lower the amount of recurrence. It also means that patients are staying shorter in the hospital which lowers the costs and reduce the amount of work for the staff. Different green spaces have different characteristics and kinds of flora to fit for everyone's needs and reassure both patient and staff could enjoy it no matter what season it is. Introducing wider biodiversity has been scientifically proven to strengthen the immune system and lower the risk of infectious diseases.

POSTITIVE WORK ENVIRONMENT



One of the biggest problems regarding the future of healthcare, that we can observe right now is the growing number of patient and shrinking staff. Hospital's staff are highly overworked due to a lack of qualified people. It is important for us that we provide a project that creates a positive work environment to makes the work if not easier than more enjoyable. We also want to make sure that Skåne Hospital is attractive for new employees and keeps happy current ones. We create a clear system of wayfinding, that makes it easy to orientate around the building and quicker to react. All the hot floors and the maternity part are connected by a long-side double corridor that gathers the flows from single corridors on the side. In our design, we shorten the distances between the patient and the staff to reduce the number of daily steps. Reducing the unnecessary distance between the nurse station and patient room makes it possible to have fewer nurses looking after patients during the night shift (which is crucial for shrinking staff). All the staff areas, whenever it is a changing room, break room or recreational area all design as an inclusive environment increase social interactions and make sure that everyone working in the hospital can recognise themselves.

PROMOTING PHYSICAL ACTIVITY



It is a well-known fact that physical activities have a positive influence on your health. By our design, we want to make healthy choices easier and encourage both patient and staff to spend more time outdoors. We separated the emergency flows on the north side of the plot to make it more bicycle-friendly and walkable in the rest of the spaces. The main entrance is visible from the tram stop. We hope to promote choosing bike or public transport over cars and create a human-centred architecture. The variety of recreational spaces provide semi-public places that could be used by both patient and staff. Green courtyards and winter gardens make it possible to enjoy those spaces no matter the season.

CONCEPT



RECREATIONAL AREAS



INCLUSION



VARIATION IN DENSITY

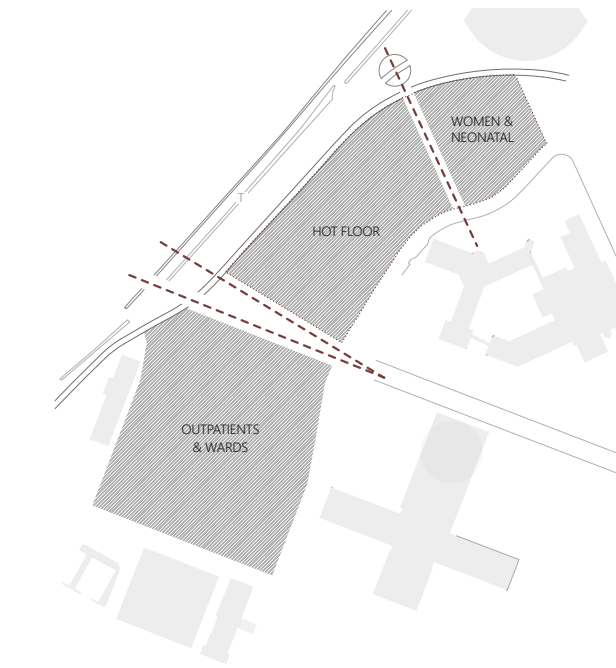
PROCESS

INTEGRATION WITH THE CITY



The building adapts to the surrounding environment, connects the green areas and connection to the city centre.

CONCEPT



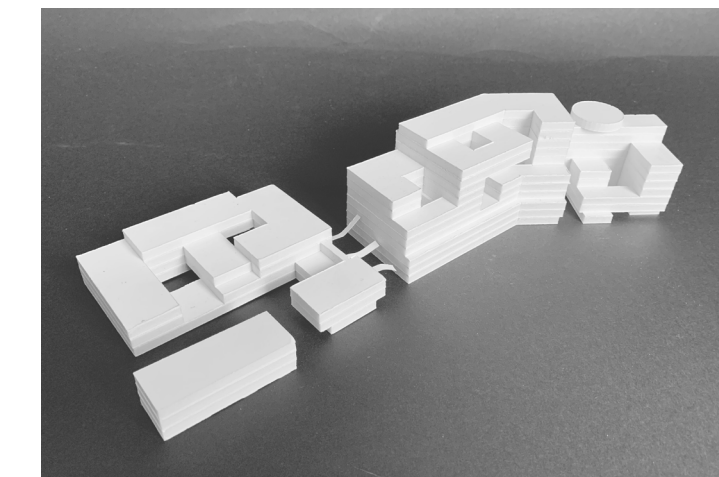
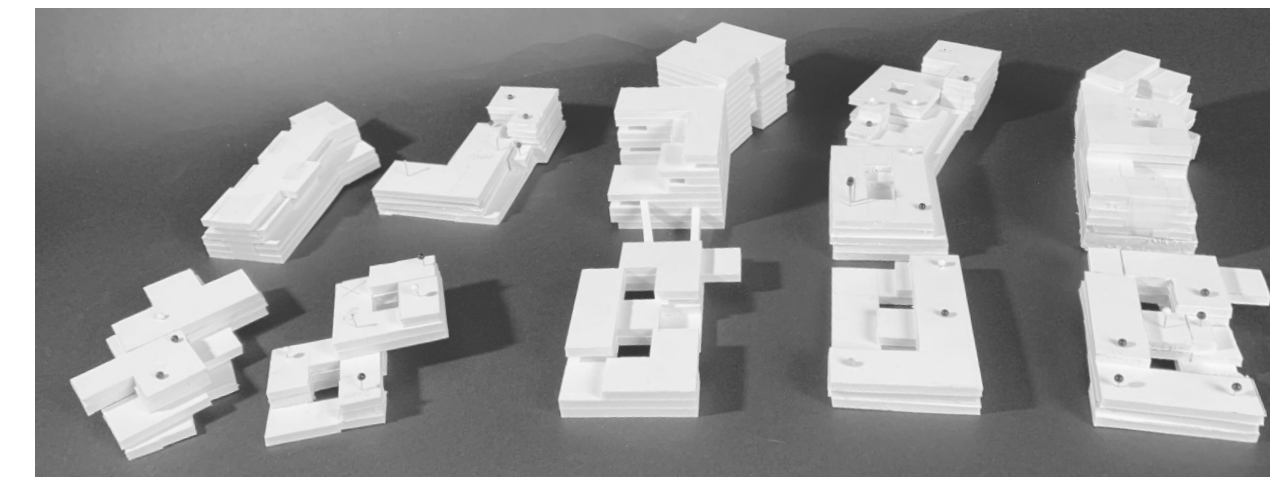
The northern part contains of the hot floor, which prioritize fast flows and patient safety. The southern part adapts to a human scale.

EXTERNAL FLOWS

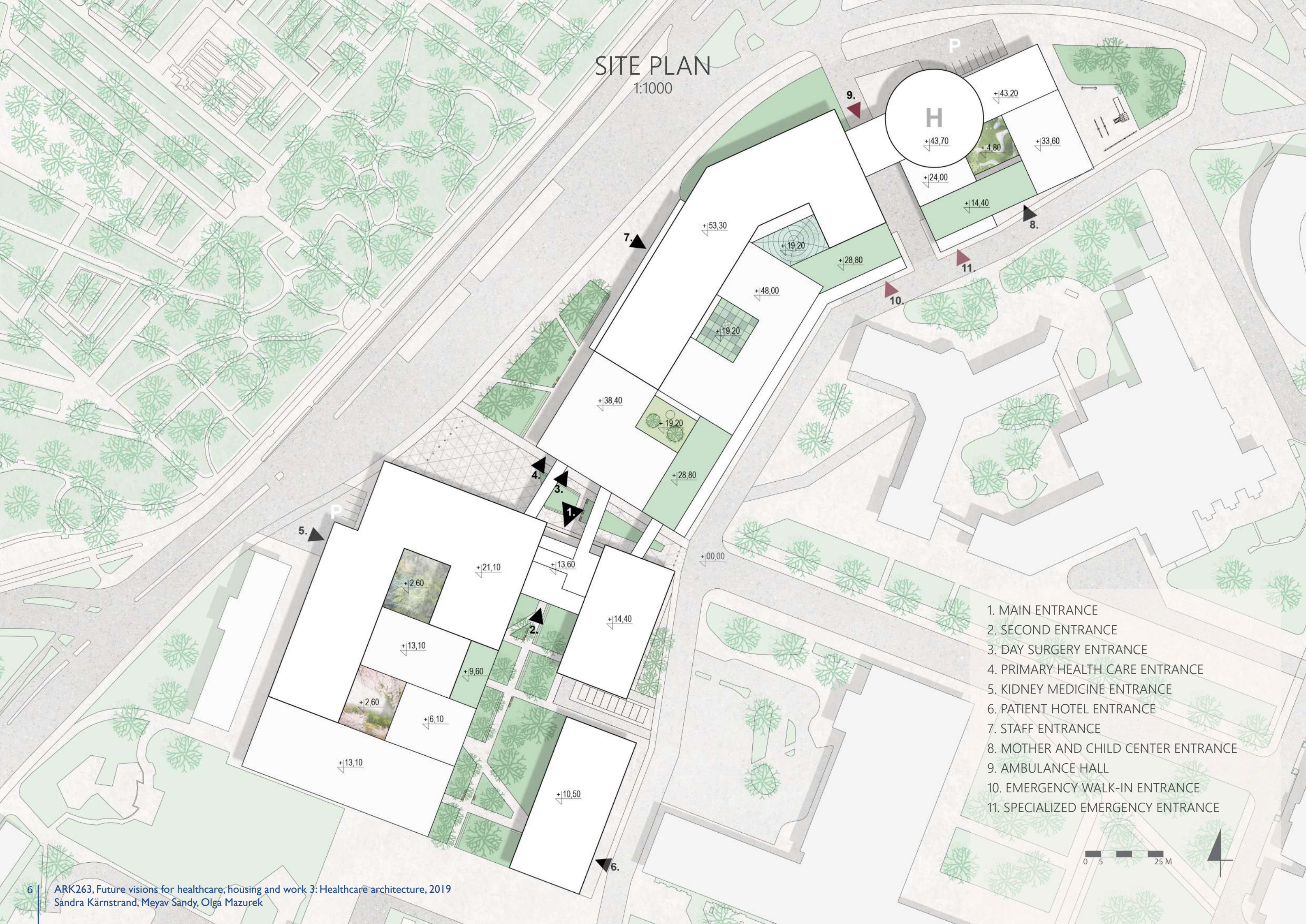


The flows are divided from each other to keep a safe area and reveal the hospital area from heavy traffic. The car flow is centralized in the northern part.

MODEL TESTING VOLMES



In order to adapt to the site in a human scale and considering the existing buildings, the building has a continuous façade from the tram line side and a deconstructed façade facing Blocket.

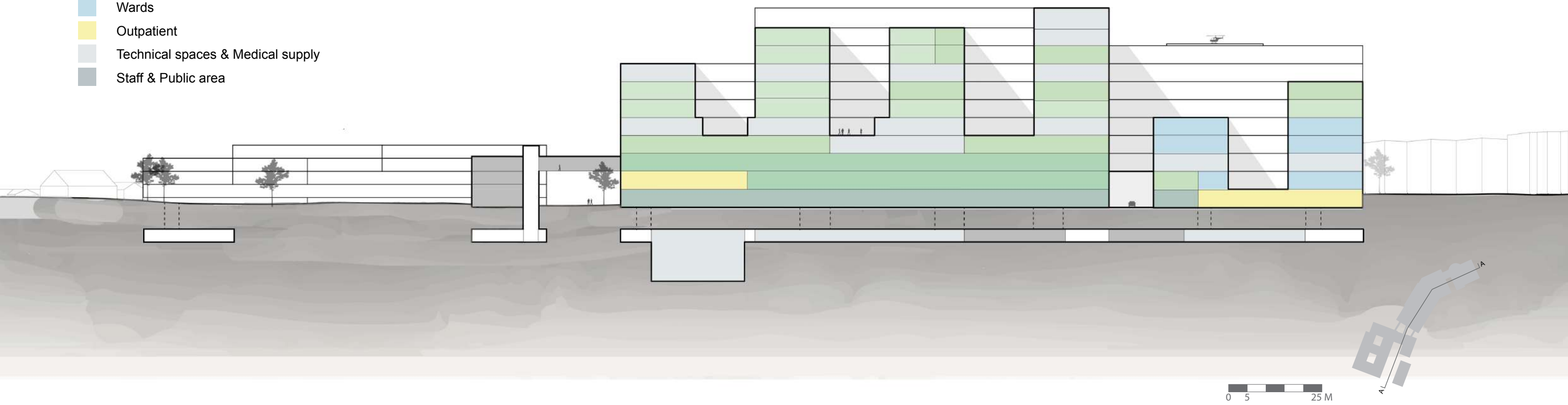


The programme is distributed over the site in different levels in order to fit. Furthermore, this resulted in a high building. With connections to recreational outdoor spaces and pockets, the building gives a sense of human scale that connects to the city centre and cultural heritage of Lund with the brick façade.

The hospital provides several entrances to avoid misleading wayfinding for different users. However, a clear and visible main entrance is provided in the middle of the boulevard which is visible from the tram, "link of knowledge" and from the previous main entrance.

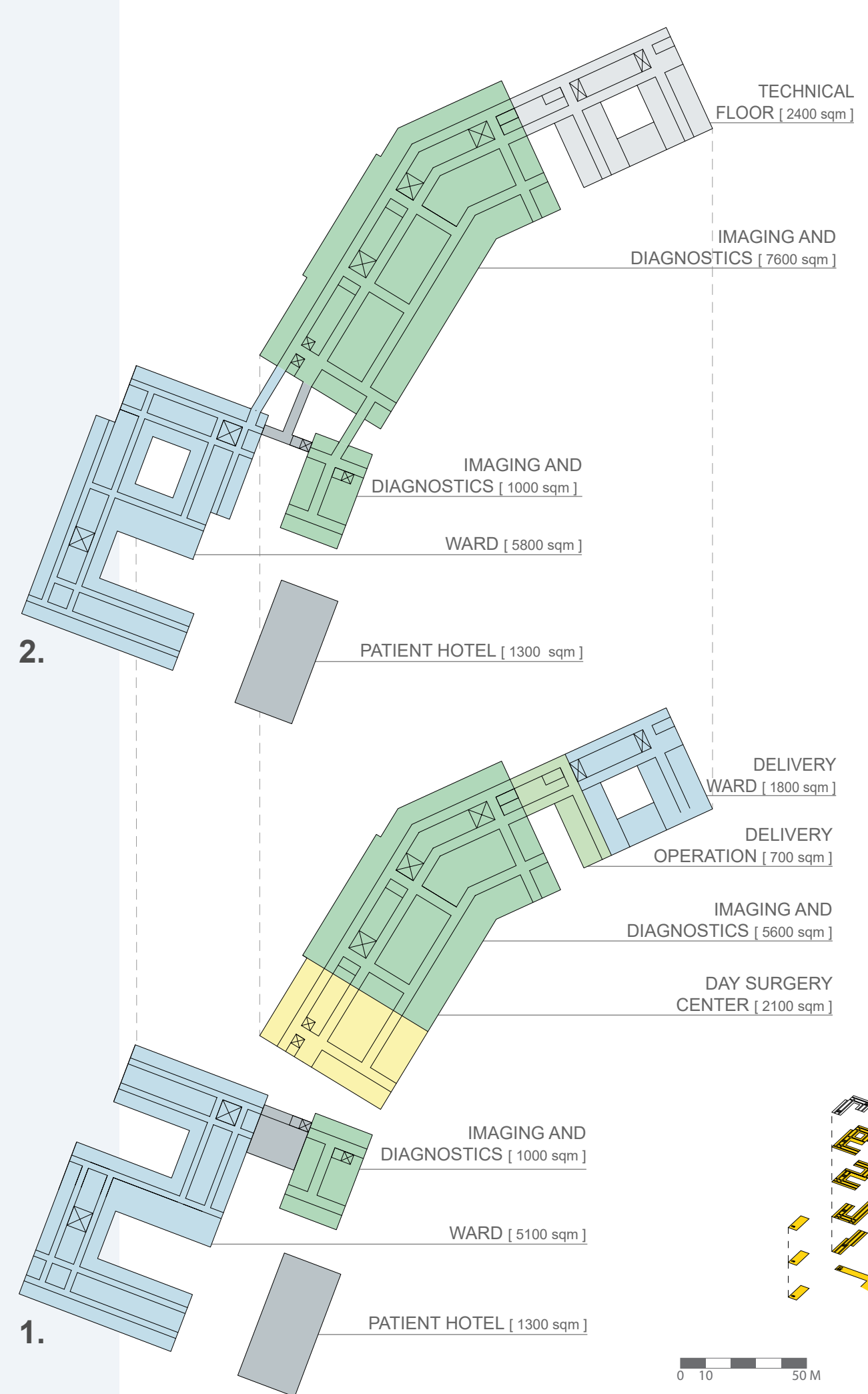
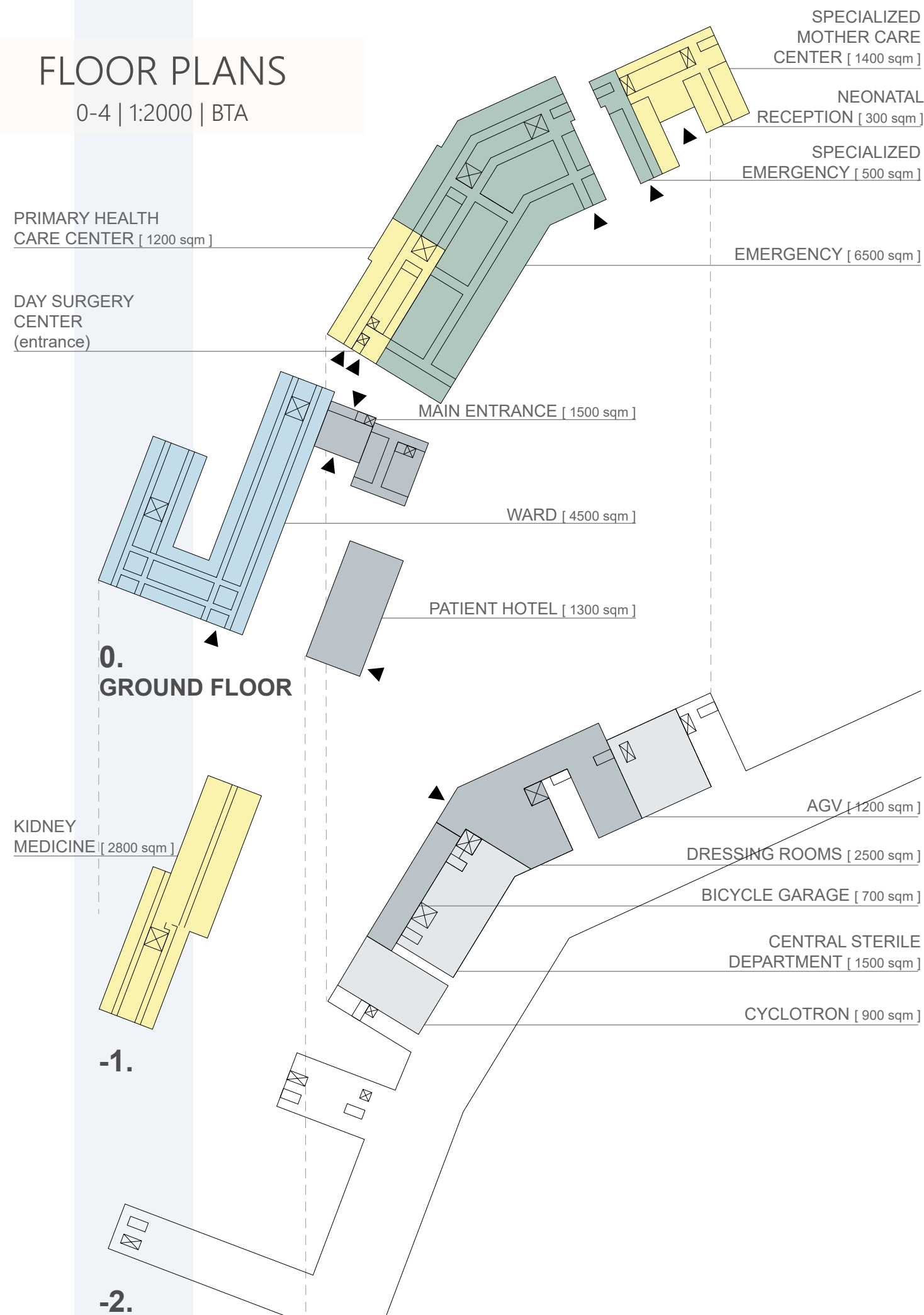
SECTION A-A 1:1000

On the northern side of the plot being the high technical hot floors, the floor height is 4.8 m while it is 3.5 m on the southern side where the wards and main entrance are located, because of the different facilities on the different sides. Bridges are connecting the building.



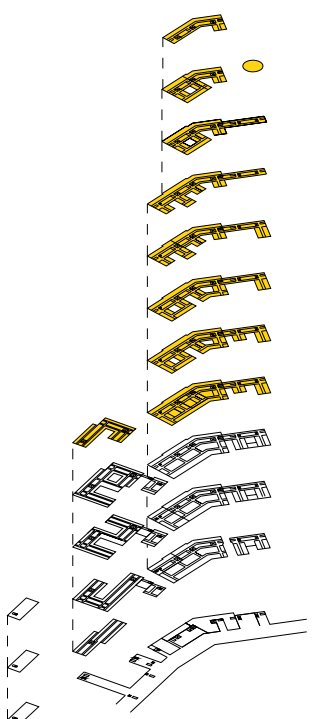
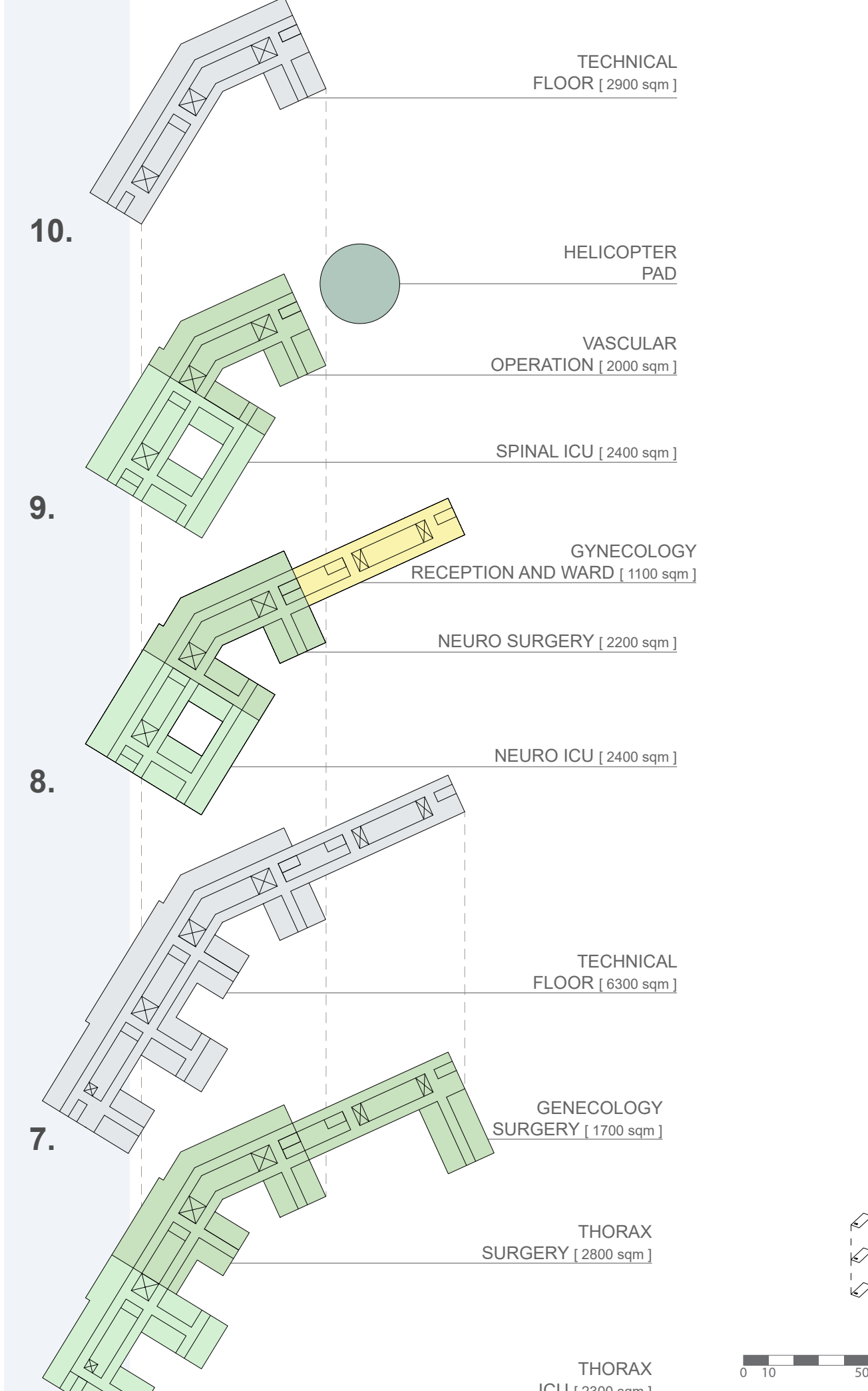
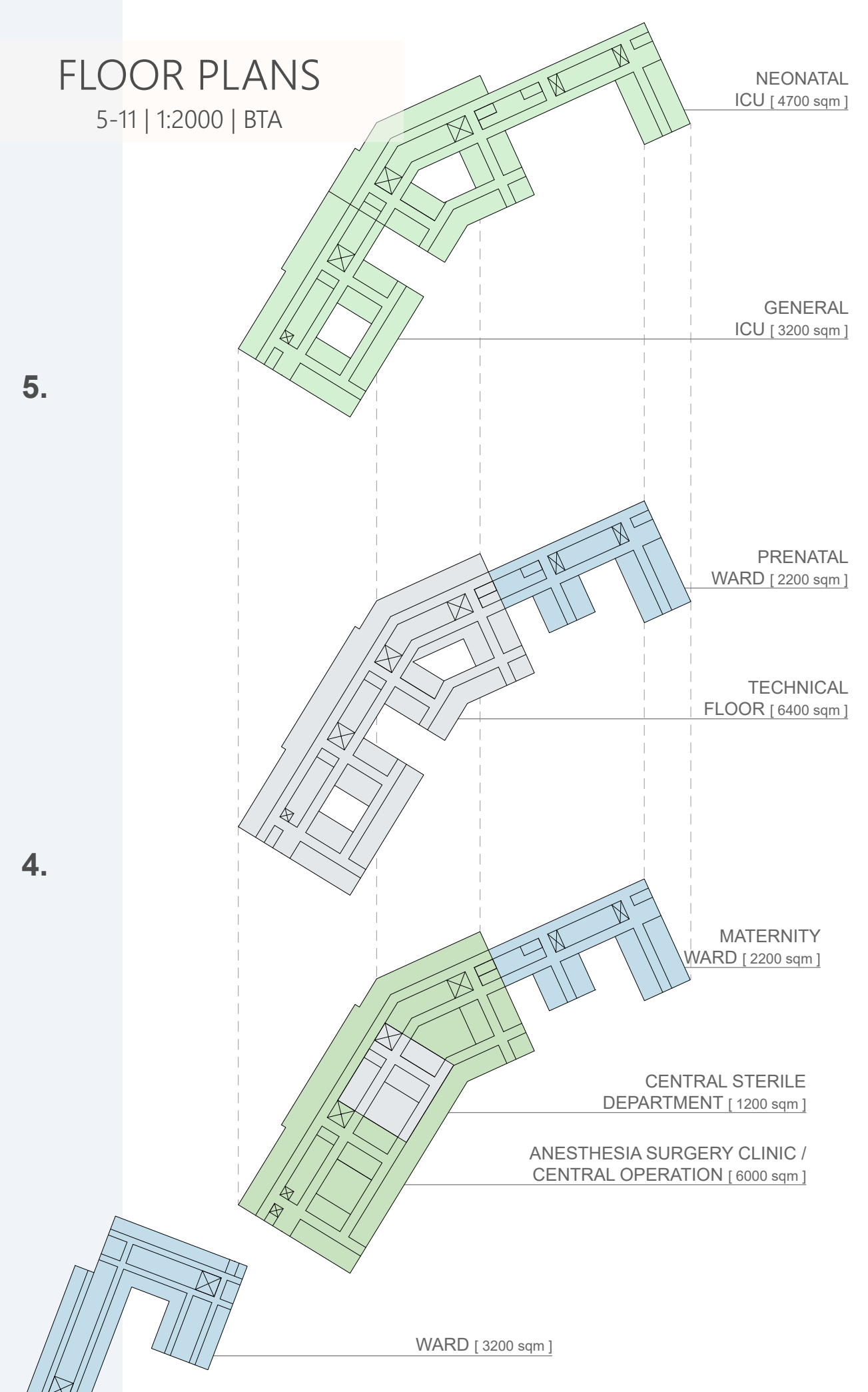
FLOOR PLANS

0-4 | 1:2000 | BTA



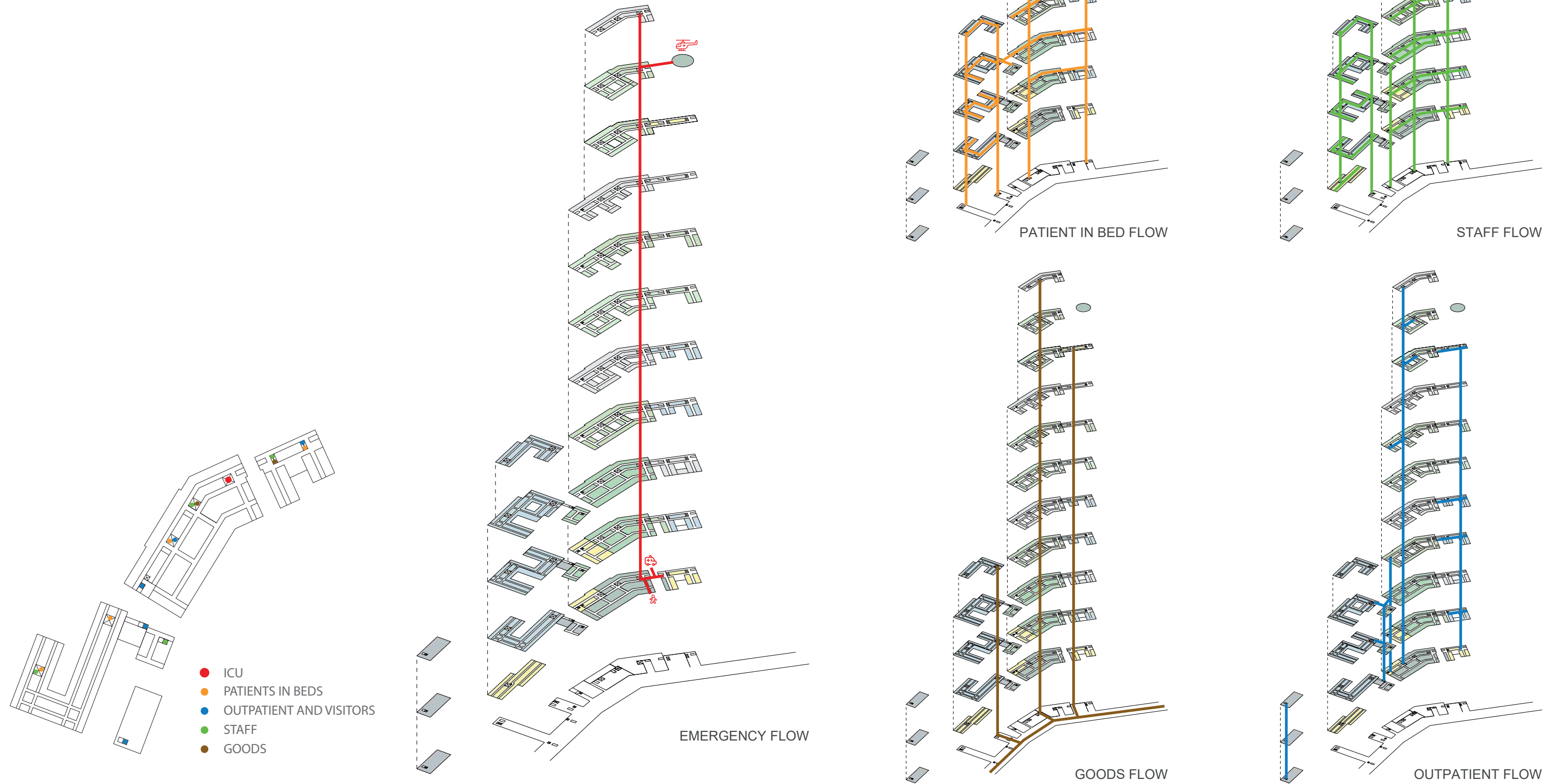
FLOOR PLANS

5-11 | 1:2000 | BTA



FLOWS

The placement of the elevators and stairs are placed strategically. In the northern building, they are placed on the nodes where the double corridor meets the single corridor which contributes to the wayfinding system. In the southern building, one of the vertical flows lays in connection to the main entrance while the other lays in the opposite corner to distribute the vertical flows to simplify for patients, staff and visitors.



AXONOMETRIC VIEW



WEST ELEVATION
1:500



REFERENCE PHOTOS



FACADE



FACADE



HOT FLOOR
MATERIAL



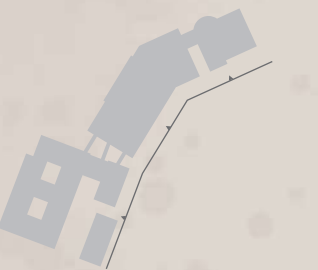
BRIDGES



WARDS
MATERIAL



EAST ELEVATION
1:500



VIEW
HOT FLOOR BUILDING



MAIN ENTRANCE
ELEVATION 1:500



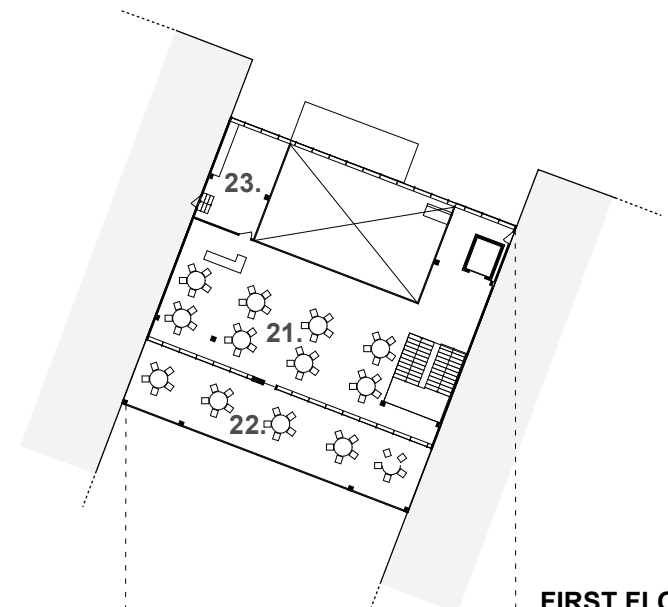
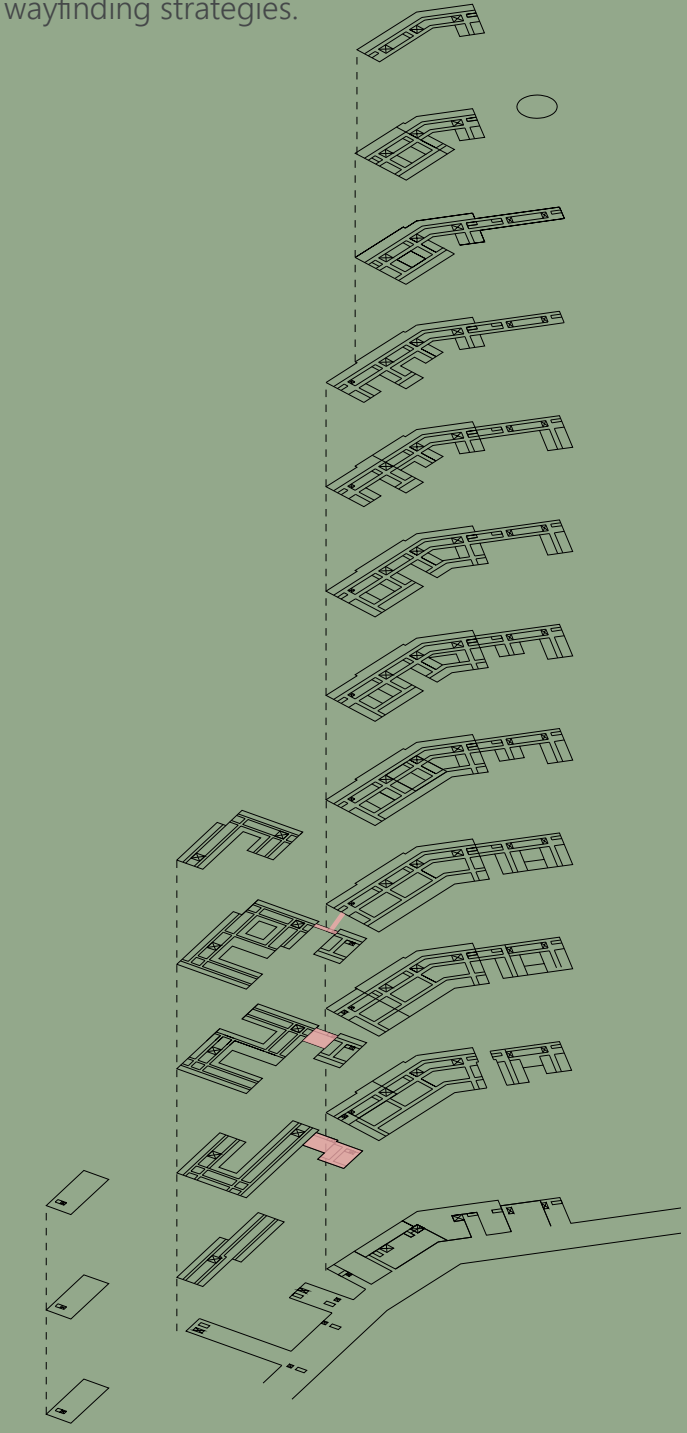
MAIN ENTRANCE
SECTION 1:500



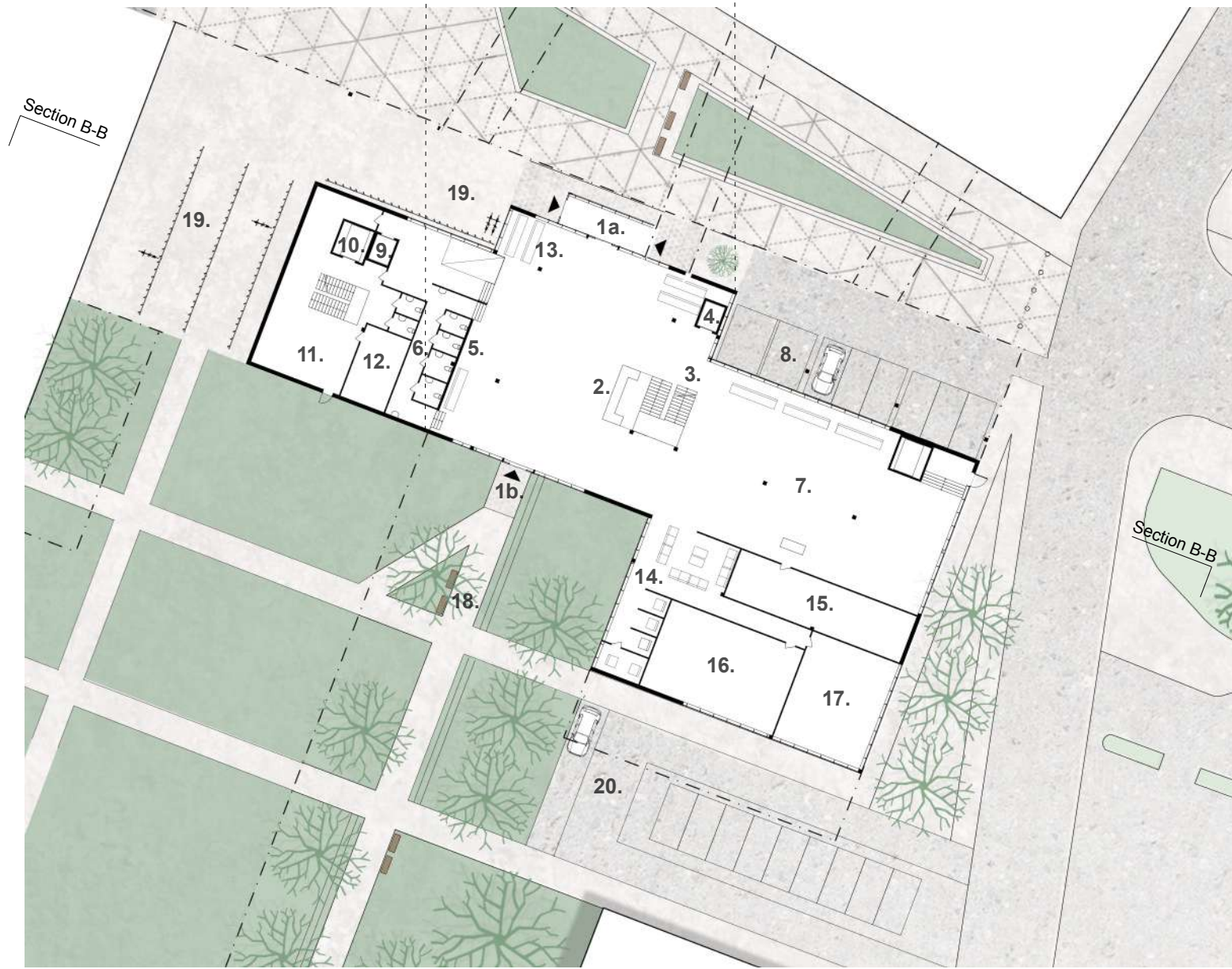
MAIN ENTRANCE

GROUND FLOOR, FLOOR PLAN 1:500

The main entrance is placed centrally on the site in the southern building, connecting the southern part with the northern. It contains of the main reception, a pharmacy, a conference room and a café, distributed on two floors. The entrance is reachable from two directions and has direct connection to green outdoor spaces. It is designed as an opened area. Clear main paths, sightlines from enter points as well as key elements are placed to get an orientation view and functions as wayfinding strategies.



FIRST FLOOR 1:500



GROUND FLOOR 1:500

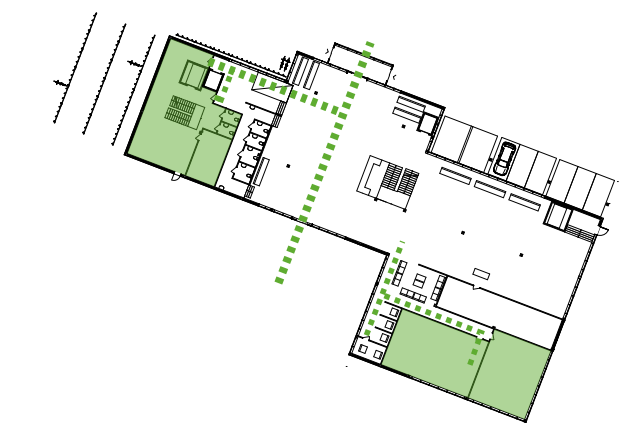
- 1A. MAIN ENTRANCE
- 1B. SECONDARY ENTRANCE
- 2. RECEPTION / SERVICE CENTER
- 3. VISITORS STAIR
- 4. VISITORS ELEVATOR
- 5. INFORMATION BOARD
- 6. WC/RWC
- 7. FARMACY
- 8. PARKING / TAXI DROP-OFF
- 9. ELEVATOR VISITORS FOR WARDS
- 10. STAFF ELEVATOR
- 11. STAFF RESTING ROOM
- 12. STORAGE
- 13. SEATING AREA
- 14. SPACE FOR CONVERSATION
- 15. FARMACY STORAGE
- 16. STAFF ROOM
- 17. EDUCATION / CONFERENCE
- 18. OUTDOOR GARDEN
- 19. BICYCLE PARKING
- 20. PARKINGS AND DROP-OFF ZONE
- 21. CAFÉ
- 22. TERRACE
- 23. CAFÉ PREPARATION



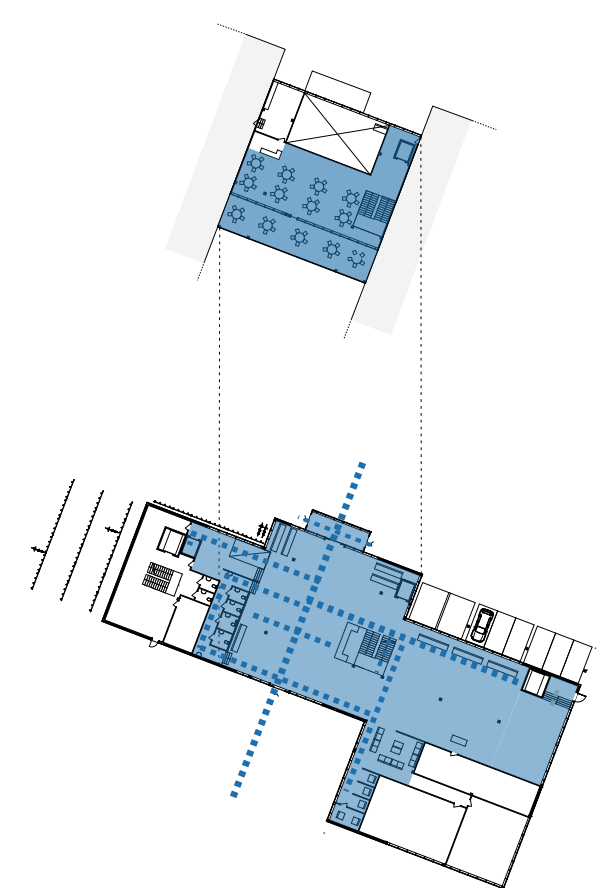
MAIN ENTRANCE

FLOWS

STAFF FLOW

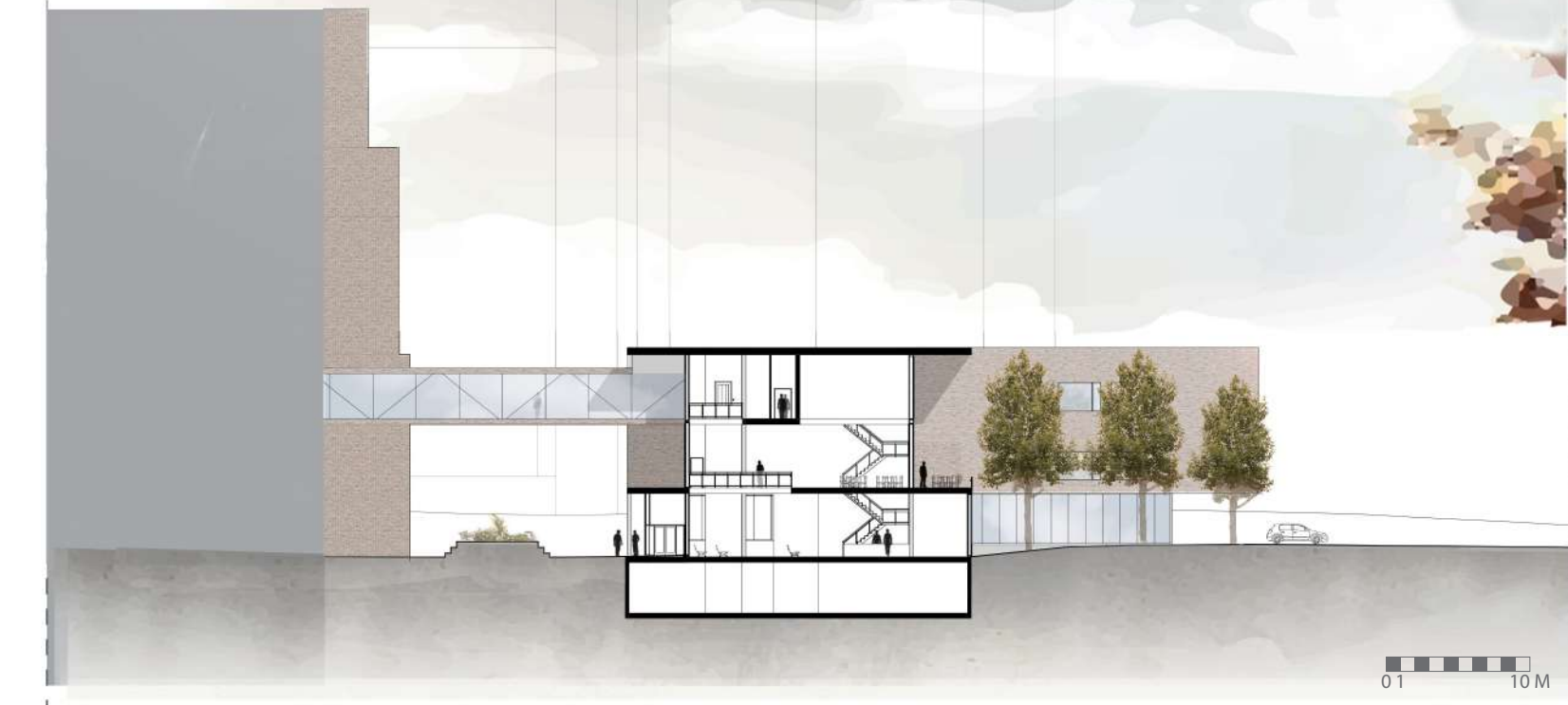


VISITOR FLOW



MAIN ENTRANCE

SECTION C-C 1:500



VIEW

MAIN ENTRANCE

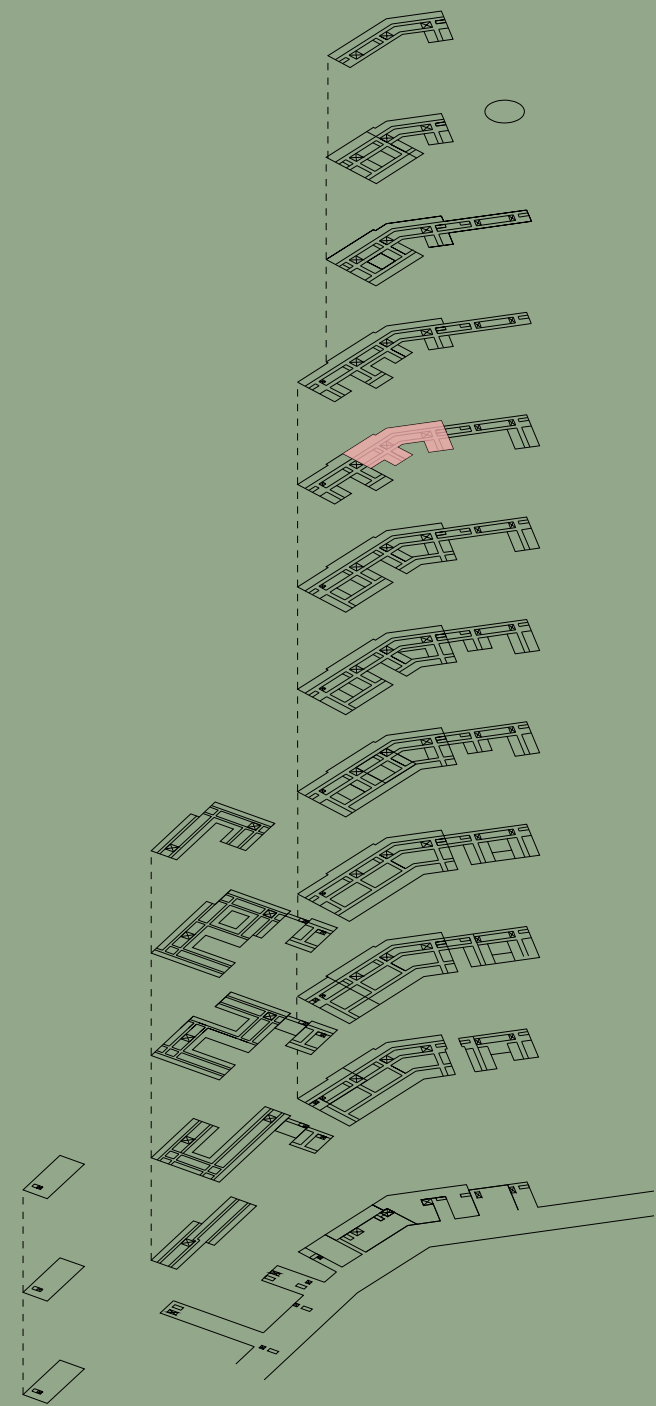


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THORAX OPERATION

7TH FLOOR, FLOOR PLAN, 1:500

The high technical department that was developed in the project was the thorax surgery. It lays on the 7th floor in the northern building. It has a direct connection to thorax ICU and gynaecology surgery. It contains of 6 operation theatres, preparation room, post operation room, 1 nurse station and 1 staff room in connection to an outdoor terrace for staff only. The department provides staff, patients, emergency and STE flows.



1. OPERATION THEATRE
2. PREPARATION
3. SCRUB ROOM
4. DRUG STORAGE
5. RECEPTION
6. BED STORAGE
7. EQUIPMENT STORAGE
8. DISINFECTION
9. LINEN STORAGE
10. STERILE STORAGE
11. DIRTY STORAGE
12. STORAGE
13. WASHING ROOM
14. POST-OPERATION
15. NURSE STATION
16. PRE-OPERATION
17. FAMILY ROOM
18. EXPEDITION
19. CONSULTATION
20. STAFF BREAK ROOM
21. RESTING ROOM
22. CONFERENCE ROOM
23. OFFICES

01 10M



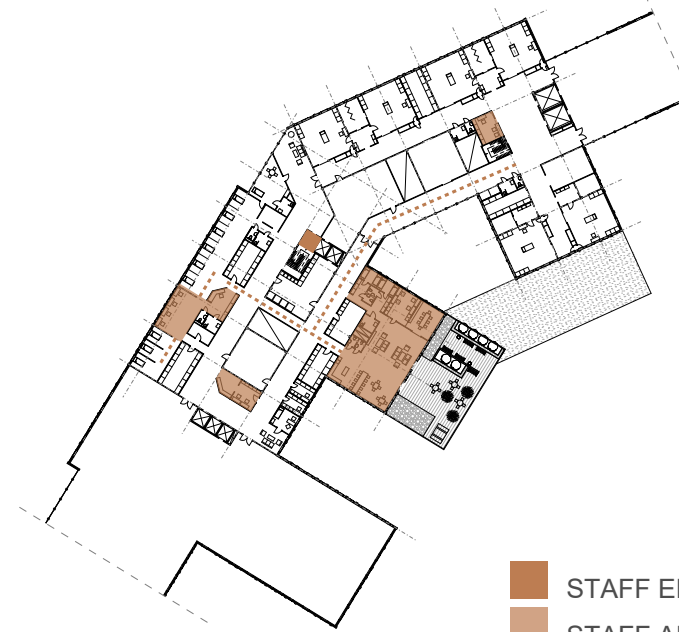
THORAX OPERATION

FLows

WAYFINDING



STAFF AREAS



EMERGENCY FLOW



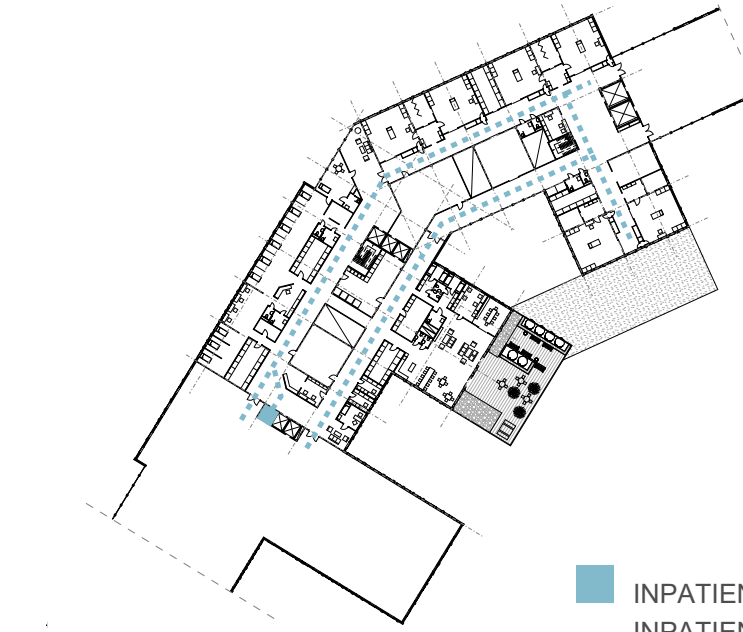
■ ICU ELEVATOR
- - - EMERGENCY FLOW

GOODS FLOW



■ STE ELEVATORS
- - - STE FLOW
■ STE ELEVATORS

INPATIENT FLOW



■ INPATIENT ELEVATOR (BED)
- - - INPATIENT FLOW

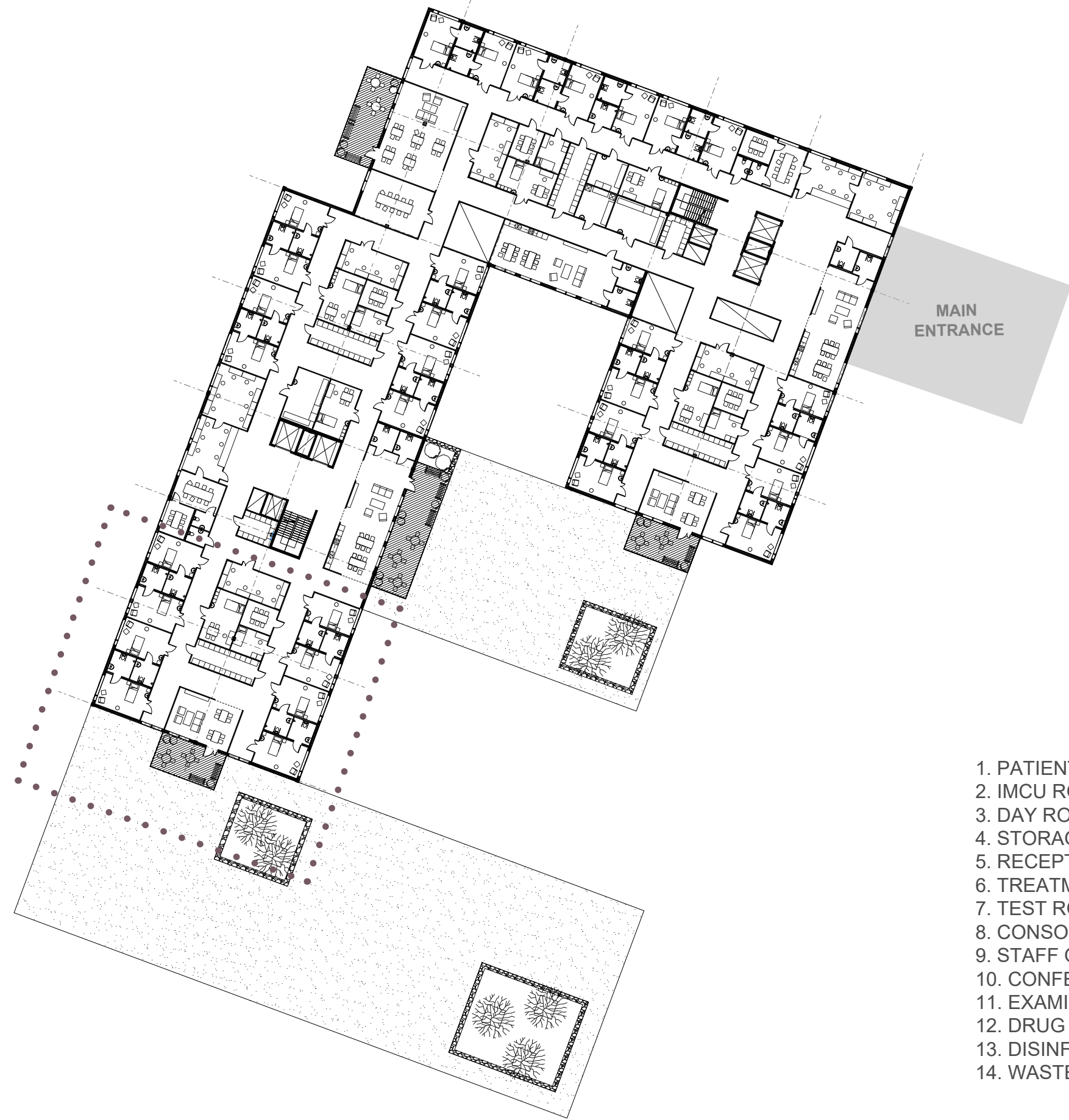
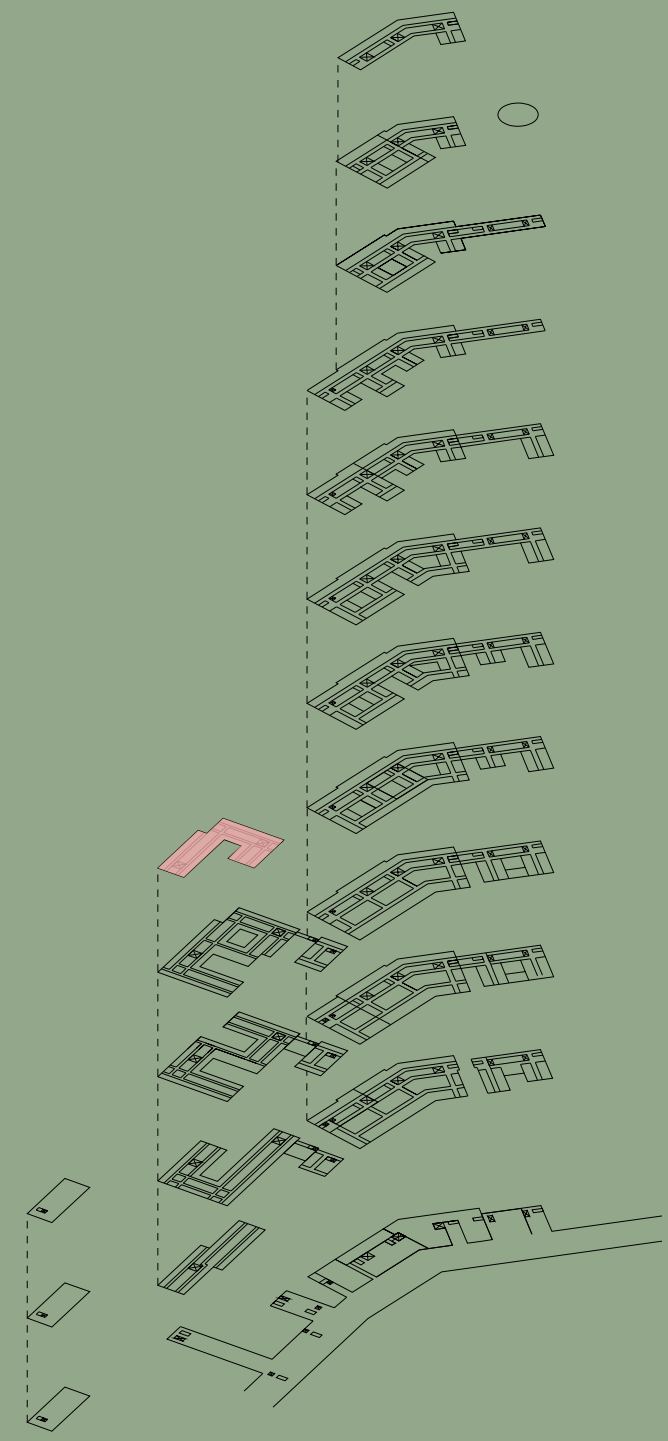
GREEN SPACES



WARD

5TH FLOOR, FLOOR PLAN 1:500

The ward unit that was developed in the project lays on the 5th floor in the southern building. It contains of 32 patient rooms, 5 dayroom that have direct connection to the outdoor spaces, 4 nurse stations and a staff room. There are 2 clusters of vertical flows for patients, visitors, staff and goods. The ward unit has a constant circulation system and a clear wayfinding system.



1. PATIENT WARD ROOM
2. IMCU ROOM
3. DAY ROOM
4. STORAGE
5. RECEPTION
6. TREATMENT ROOM
7. TEST ROOM
8. CONSOLTATION ROOM
9. STAFF OFFICE
10. CONFERENCE ROOM
11. EXAMINATION ROOM
12. DRUG STORAGE
13. DISINFEKTION ROOM
14. WASTE ROOM

01 10M



WARD

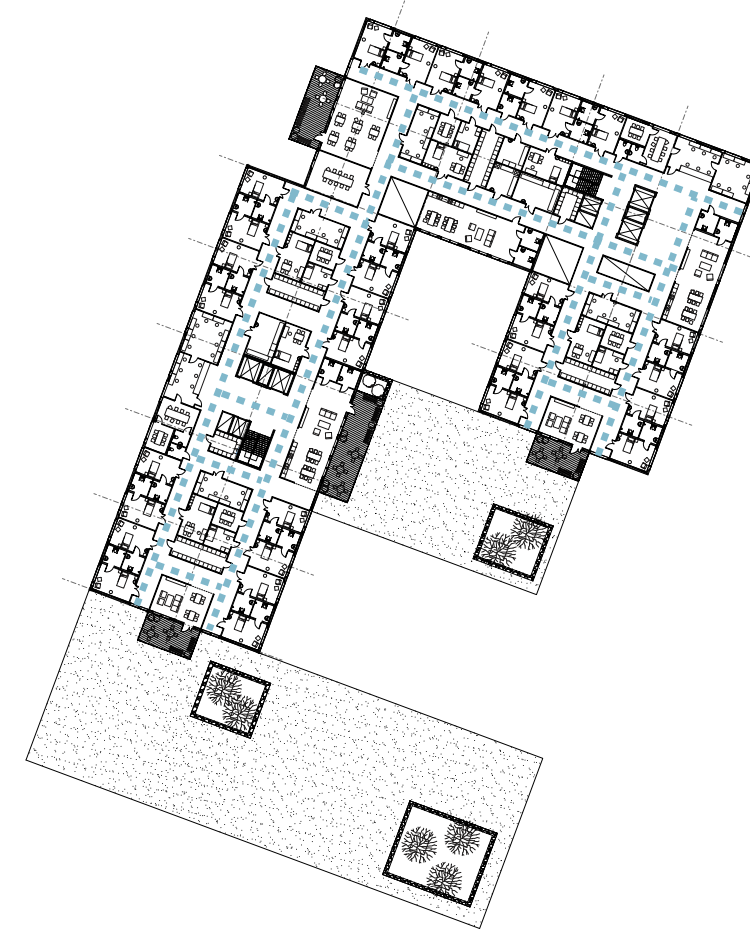
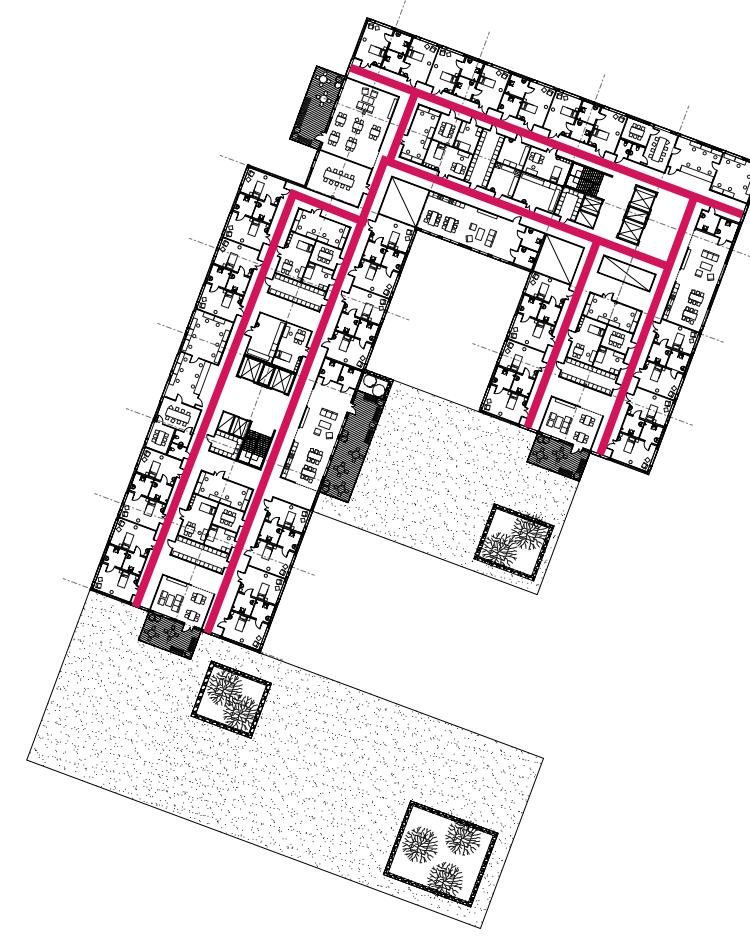
SECTION D-D 1:500



WARD FLOWS

WAYFINDING

INPATIENT FLOW



ROOMS



GREEN SPACES

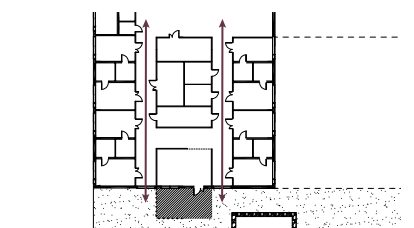
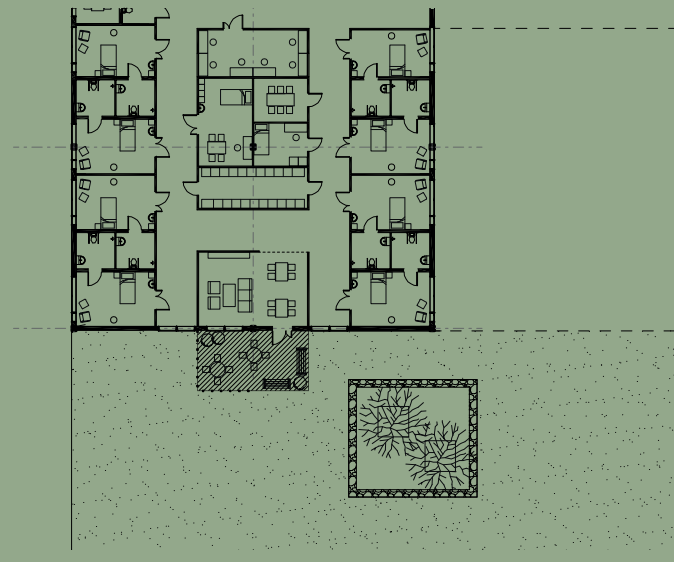


WARD FLOOR PLAN, 1:200

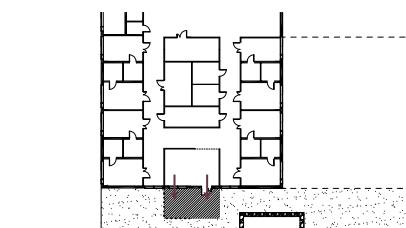
The ward has four separate divisions which consists of six general patient rooms and two IMCU rooms. Each eight room division has its own nursing station where the staff has access to storage, a office space with direct outlook to the IMCU rooms, a treatment room and a test room for the patients, a consolation room which can also be used for smaller staff meetings and a dayroom for visitors and patients with direct connection to a balcony to allow a connection with the outdoor environment. Each balcony provides a green space view and acts as a recreational area for the patients.

The common staff area is located in the centre of the ward for all the staff to use. This is a part of the staff inclusion design strategy to make all the staff come together in one place. Furthermore, there is a bigger conference room for the staff to use. There are also two reception areas in the ward if needed for future division. They are placed next to the vertical flows to help guide any visitor. The two receptions are connected to office spaces.

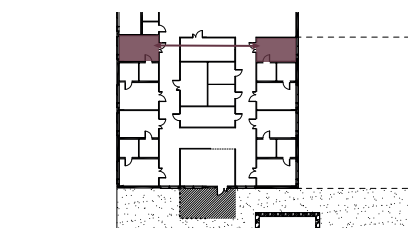
The IMCU room has the same dimensions as the general room with the purpose of being flexible for future changes if needed. The patients have close access to the treatment room because of the eight room division which a comfort and safety for them.



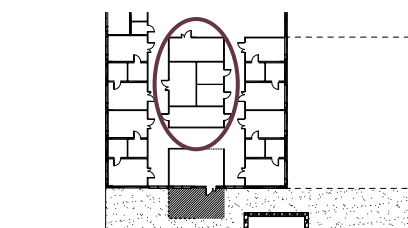
Sightlines + Outlook – Creating a clear view from the corridor path to help the wayfinding.



Outdoor space – Easy connection to outdoor spaces from the dayroom for patients to recover.



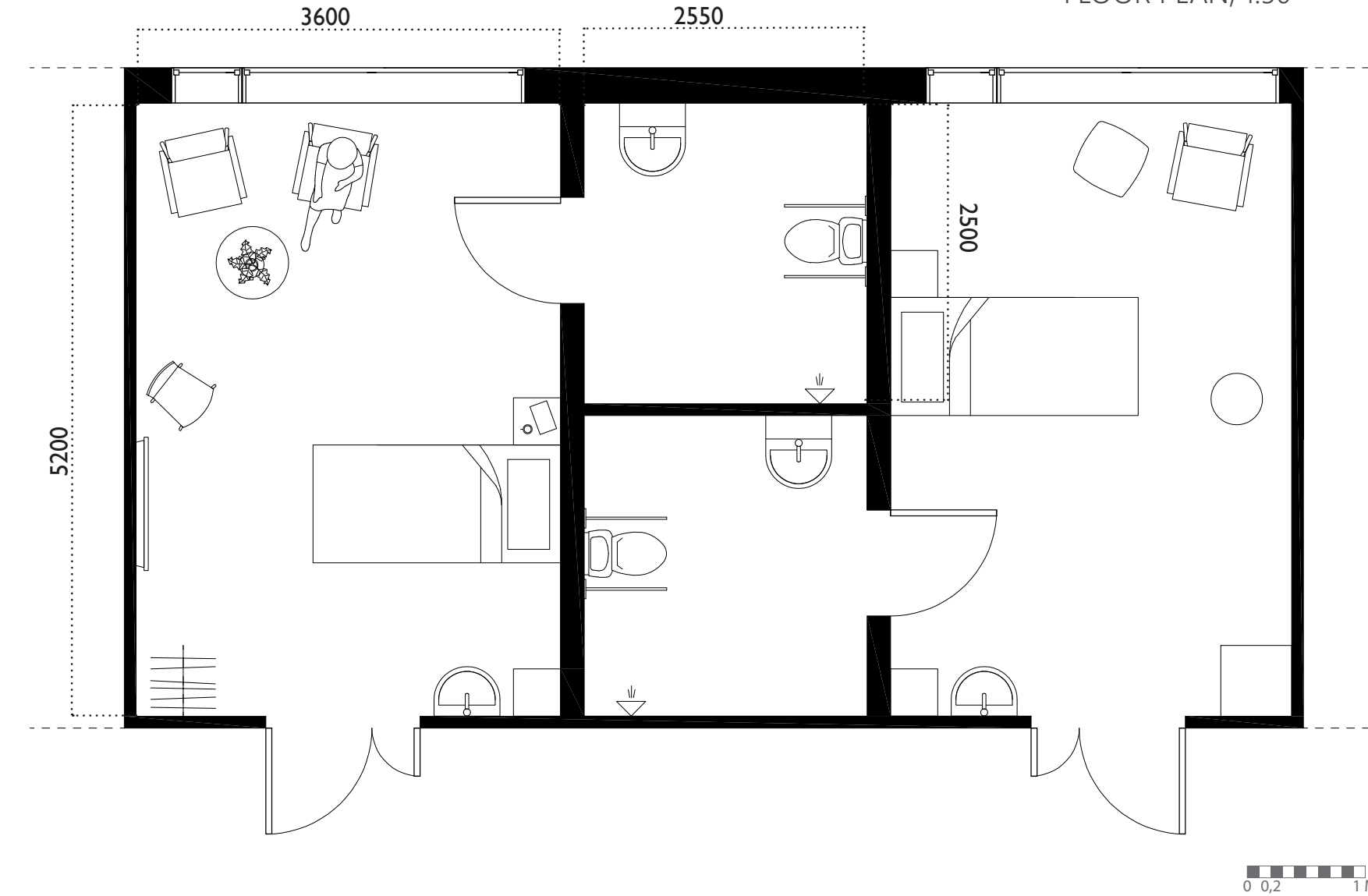
IMCU – Offices having direct sightline into the IMCU for surveillance of patients.



Circulation – Create a clear circulation path through the ward unit to avoid dead-end corridors.

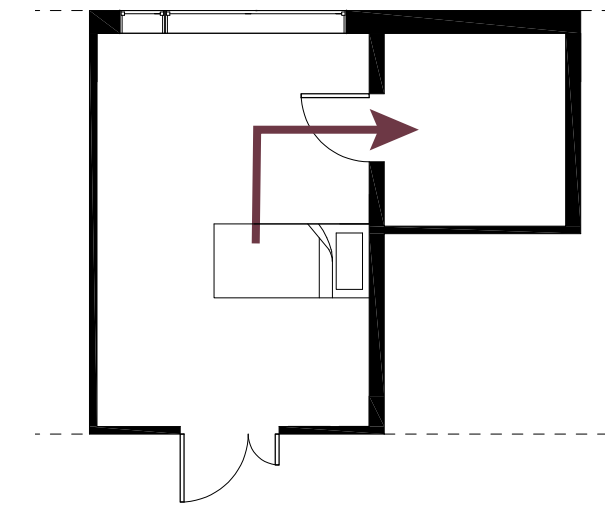
VIEW PATIENT ROOM

PATIENT ROOM, WARD FLOOR PLAN, 1:50

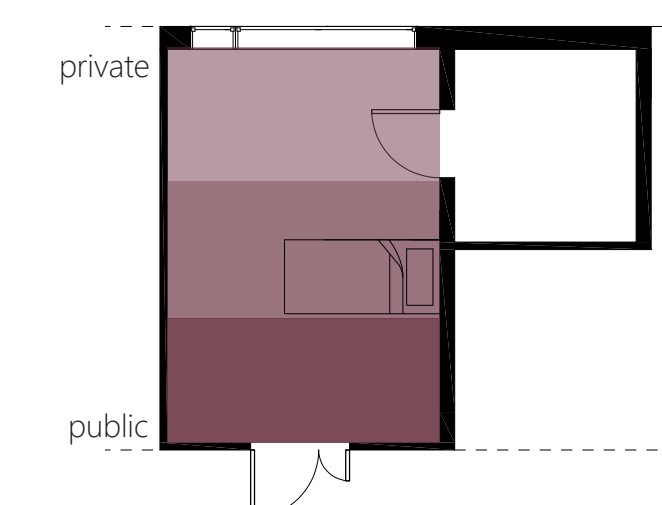


The patient rooms are 5.2 meters times 3.6 meters which adds up to 19 square meters. Each patient room has an own private bathroom which is 2.55 meters times 2.5 meters which adds up to 6.5 meters. The bathrooms are large to be able to fit wheelchairs if needed. Furthermore, the patient rooms have a large window in order to create a direct connection to the outside and provide sunlight in the room. The large windows provide sitting areas. However, you also have the space to put chairs and tables.

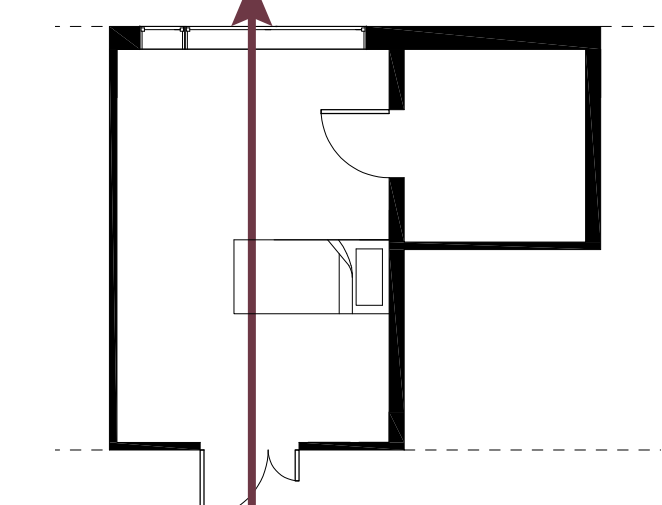
The focus in the patient room is the patient. Every quality is provided from the patient bed. The outlook to the outside and the door for safety. The sightline for the door to the outside to create a good indoor environment. The easy access to the bathroom from the patient bed. Furthermore, the patient zone acts a connection between visitor zone and staff zone to make the patient feel like they are in control of the room.



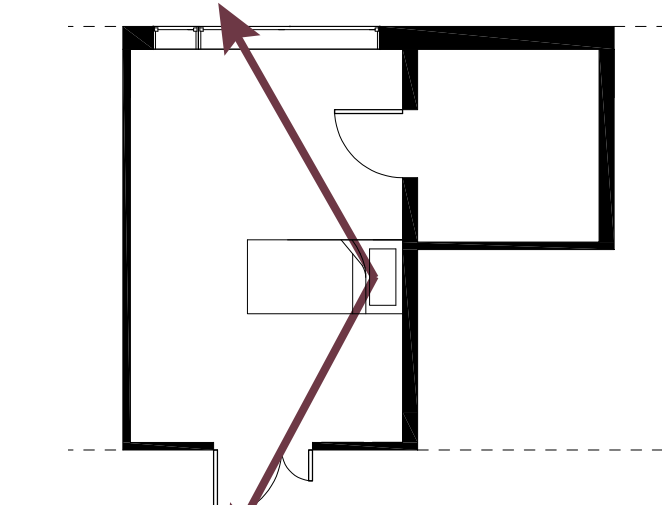
Access – Clear access to bathroom to avoid accidents.



Zones – Clear zones to create a semi-privacy and room division.



Sightlines – Seeing across the room to create better indoor environments.



Outlook – Having a clear overview over the room for safety.

RECREATION AREAS

COURTYARDS



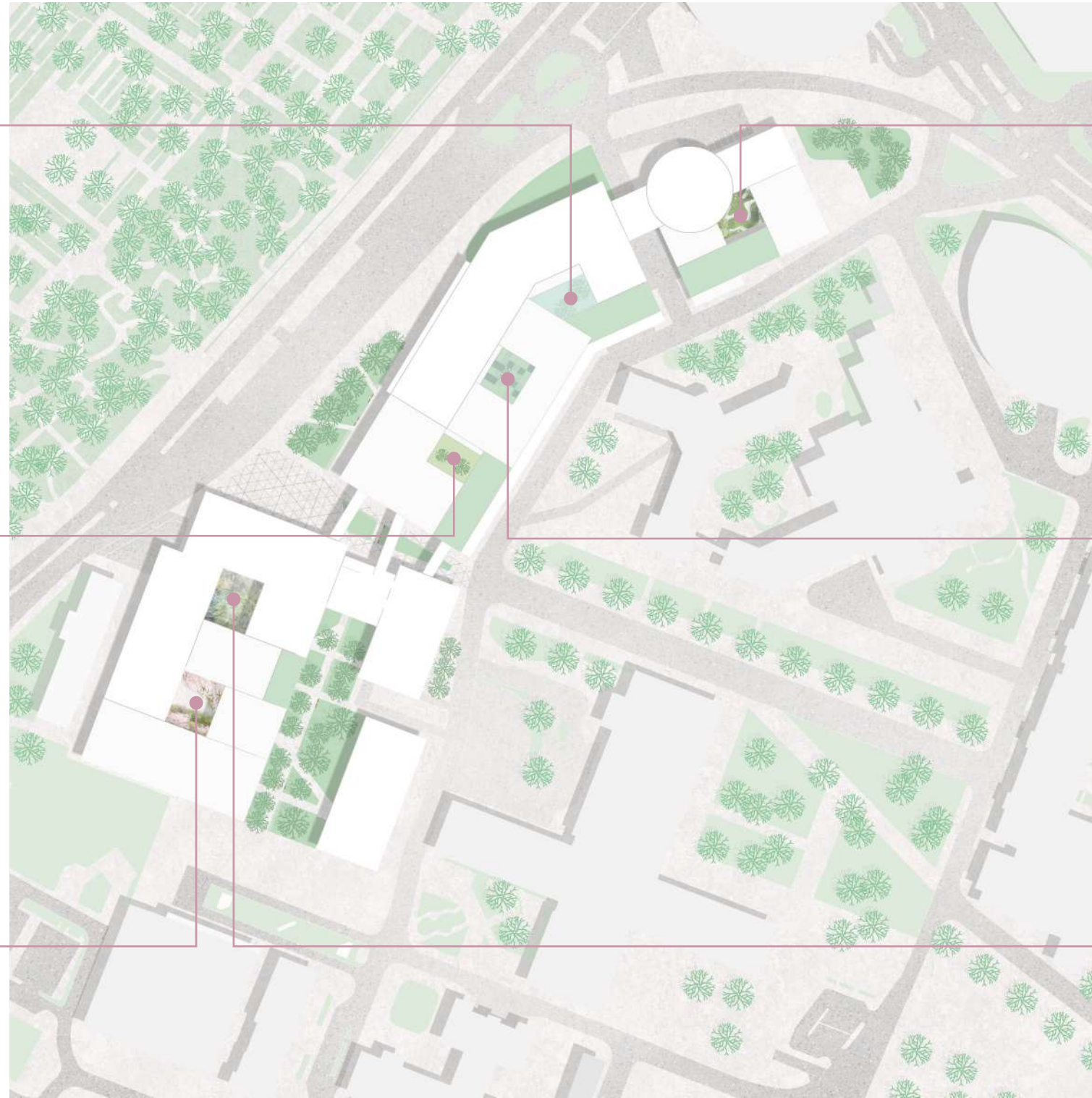
GREENHOUSE
glazed,
all year round,
lower bushes



STAFF ONLY
smaller trees,
urban furniture,
wood



SPRING
water,
straw,
cherry trees



PLAYGROUND
child friendly,
safety,
exploration



SQUARE
low greenery,
playfulness,
social



WINTER
conifer,
evergreen,
shades

