ARK263 I autumn 2022

Vårdcentral Vadstena

Group 2
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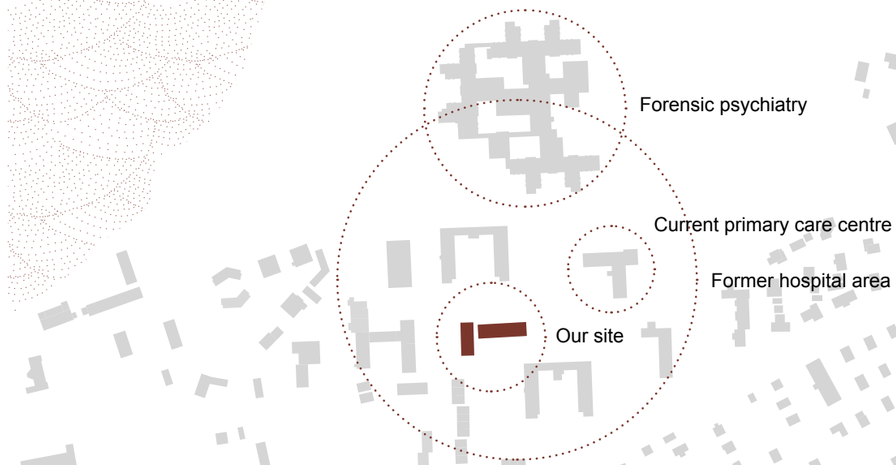
UNIVERSITY OF TECHNOLOGY

Introduction

Primary care for Vadstena

Sweden

Östergötland county



Our task

Our assignment was to design a new primary care center, *Vårdcentral* in Swedish, for Vadstena. Vadstena is a town in Sweden's Östergötland county, roughly 240 kilometres away from both Gothenburg and Stockholm. The town has a long history in healthcare, dating back to a medieval monastery that cared for the sick and injured, until this day, where one of Östergötland's biggest forensic psychiatries is located here.

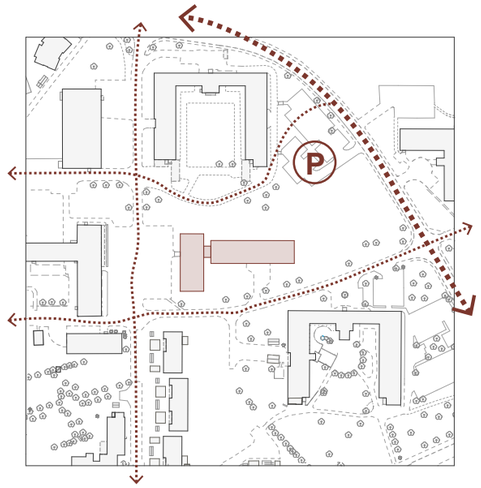
The current primary care centre has gotten too small by now, and did not fit the needs of a modern healthcare facility any longer. For this reason the regional healthcare authority decided to build a new primary care centre for Vadstena, on a site that also has a long history in healthcare architecture: The surrounding buildings used to be part of a big Pavillon-style hospital complex built between 1947 and 1961. These former hospital buildings however were reused over time, and today only the old primary care centre is still used as a healthcare facility.

Part 1

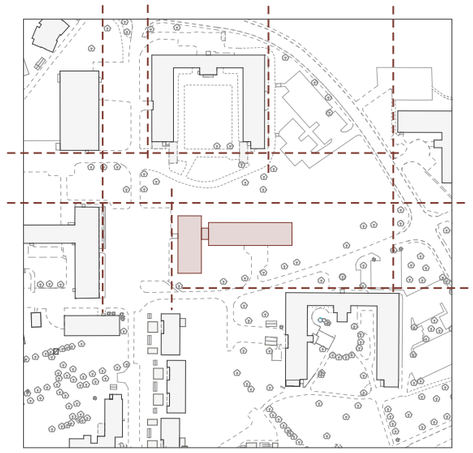
Analysis and concept

Context

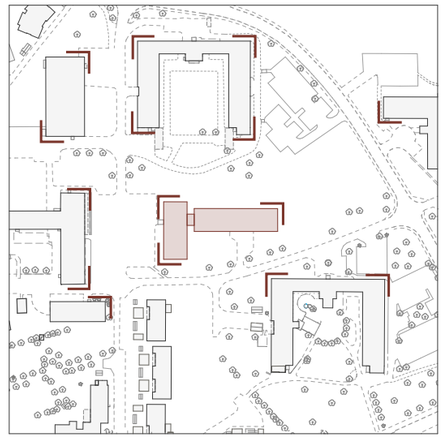
Site analysis



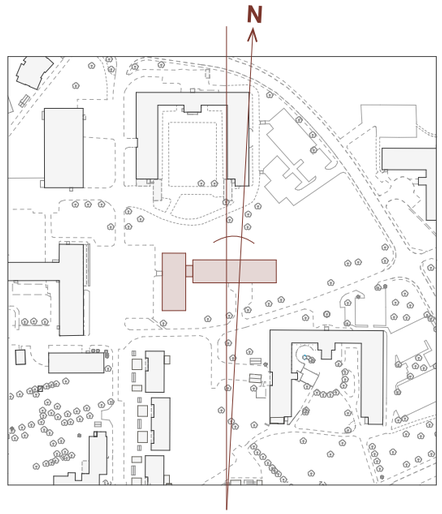
❶ **Roads and connections**



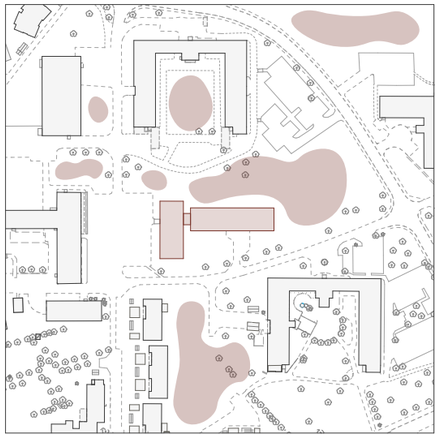
❷ **Main axis**



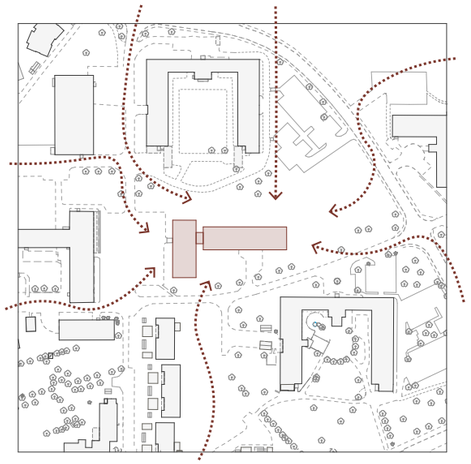
❸ **Orthogonal vs organic**



❹ **Tilted city layout**



❺ **Distance green**



❻ **No front- or backside**

❶ **Roads and connections**
The site can be accessed by several walking paths connecting it to the city centre and to lake Vättern. It is also accessible by car and a parking lot is already on the site.

❷ **Main axis**
There are several straight axis running through the city layout defining big orthogonal spaces in-between.

❸ **Orthogonal vs organic**
The historic hospital buildings in the surrounding area are all orthogonal and placed along an overall grid. This contrasts to the organic street layout.

❹ **Tilted city layout**
The orthogonal grid, that the surrounding buildings follow, is tilted by 7 degrees.

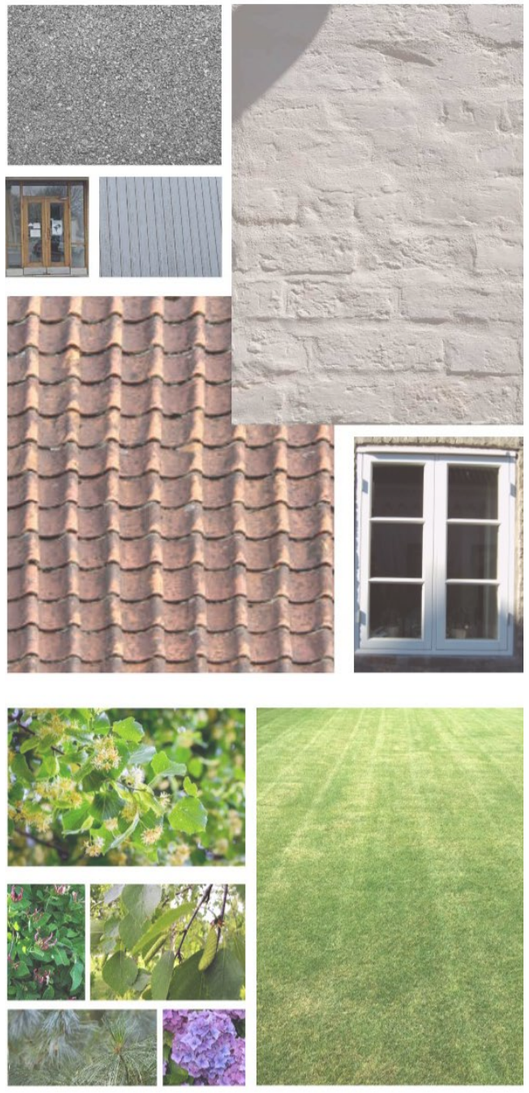
❺ **Distance green**
The green spaces between the buildings are vast, underused lawns, resembling the typical *distance green* spaces typical for 1960s architecture.

❻ **No front- or backside**
Our site has no distinct front- or back side. It can be accessed from all directions equally, making it difficult to define an entrance area.

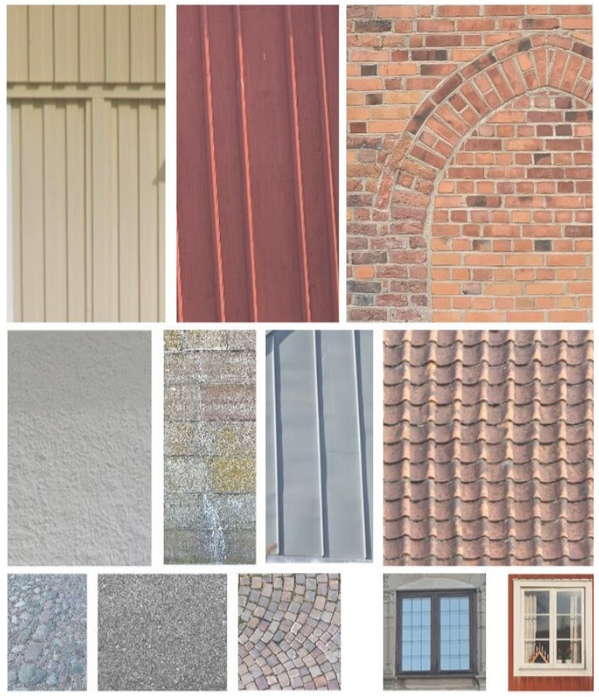
Context

Material moodboard

0-5 minutes
Walking distance from site



5-10 minutes
Walking distance from site



10-15 minutes
Walking distance from site

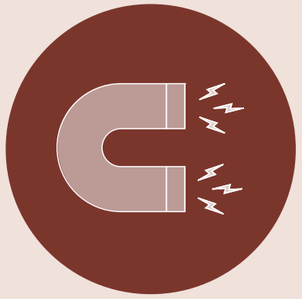
Design strategies

Health promotion

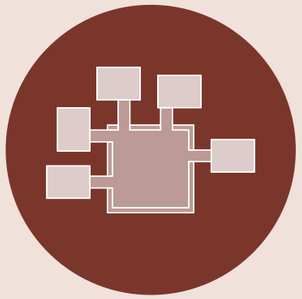
❶ Connecting nature and built environment

❷ Activating waiting areas and circulation

Brief & logistics



❸ Creating attractors



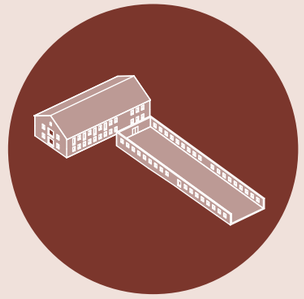
❹ Common waiting area, central hub

Site & context

❻ Improving existing landscape design

❺ Combining dental care and primary care centre

Sustainability



❼ Reusing existing buildings

❽ Creating an adaptable, future-proof structure

❶ **Connecting nature and built environment**
Our design should interlink the buildings to the surrounding, letting the nature flow through the interior, as relatedness to greenery provably has health promoting effects on both patients and staff.

❷ **Activating waiting areas and circulation**
Patients will spend most of their time in this facility in the waiting area. Therefore we should pay close attention to an active, appealing waiting area making waiting times more enjoyable.

❸ **Creating attractors**
Our neighbourhood and especially Birgitta square lacks attractors other than healthcare facilities, that bring people to our site and make them want to spend time there.

❹ **Common waiting area, central hub**
In accordance to our second design strategy, we want to combine all waiting rooms into one central hub, to make the facility and it's flows more clear to the patient.

❺ **Combining dental care and primary care**
Certain functions, such as administration, staff areas or conference rooms, can be shared between both departments.

❻ **Improving existing landscape design**
Our site currently lacks decent landscape planning, leaving it's vast areas of *distance green* unused. In our landscape design proposal we want to create a more articulated and more biodiverse surrounding.

❼ **Reusing existing building**
Following the ideas of sustainable architecture, we want to reuse the buildings that are already on the site in our proposal.

❽ **Creating an adaptable, future-proof structure**
Our design should feature an adaptable future-proof structure enabling easy alterations.

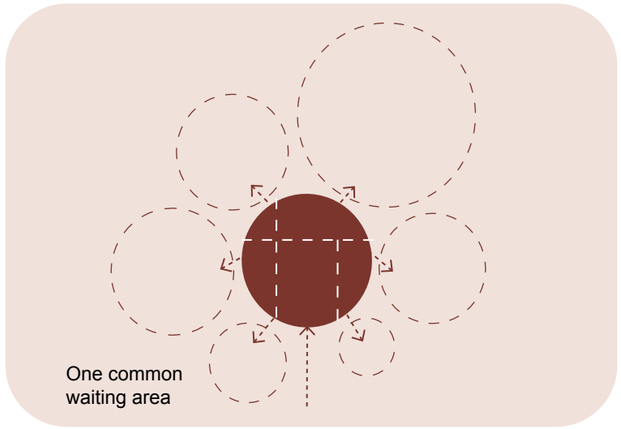
Challenging the brief

Original brief

Our proposal

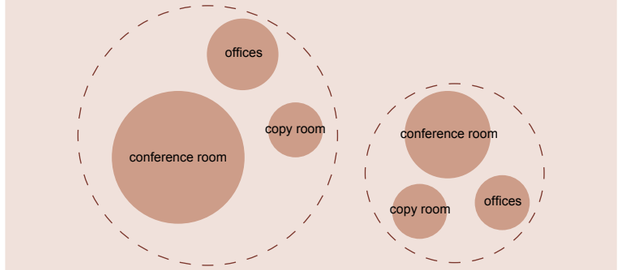
❶

Separate waiting rooms
for every unit

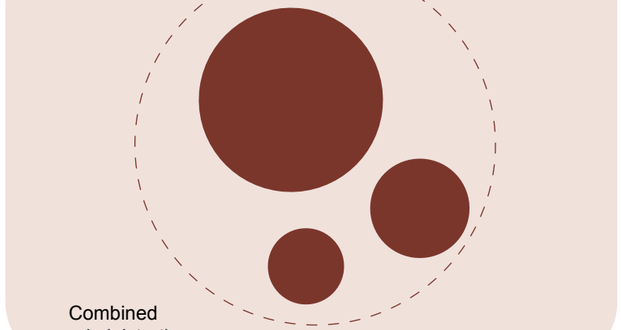


One common
waiting area

❷

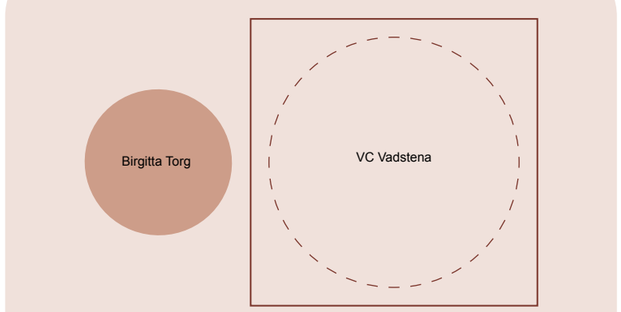


Separate administration areas
for PC and dental care

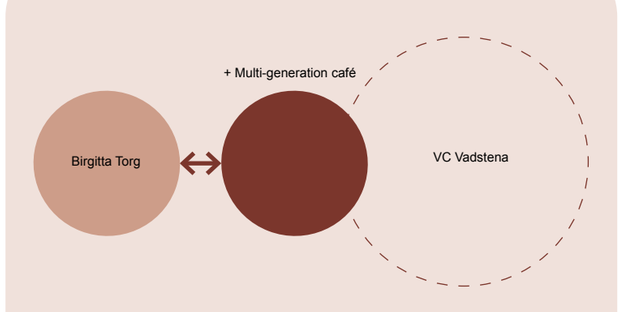


Combined
administration area

❸



No connection to Birgitta Torg and
the surrounding neighbourhood



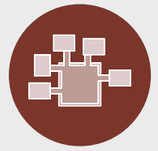
Adding the multi-generation café
that serves as attractor

❶ **One common waiting area**

In the original brief, every unit has it's own separate waiting room. We want to combine these rooms into one big waiting area. Nevertheless, this waiting space should allow for partitions, creating different zones for children or elderly.

Design strategy:
Activating waiting areas and circulation

Design strategy:
Common waiting area, central hub



❷ **Combined administration area**

The brief given to us proposes two separate administration and staff areas for the dental care unit and the primary care unit. We decided to merge these two areas into one, to reduce certain spaces by sharing them between the units.

Design strategy:
Combining dental care and primary care centre

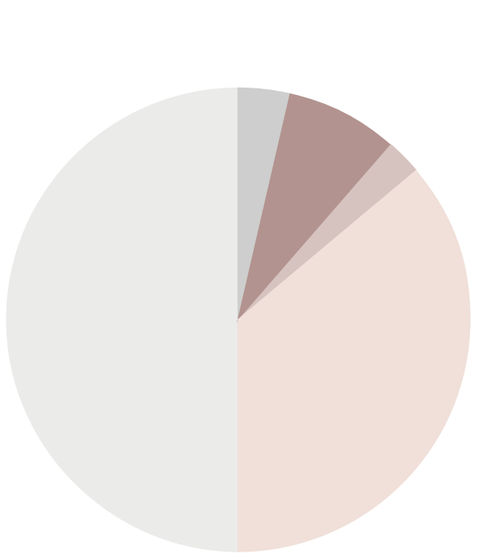
❸ **Adding an attractor**

To invite more people to our site, and to reactivate the now-abandoned Birgitta square, we decided to add a *multi-generation café* in the building adjoining the square. The café is supposed to be an open space, that can be used for different activities by the young, as well as the growing elderly population of Vadstena.

Design strategy:
Creating attractors

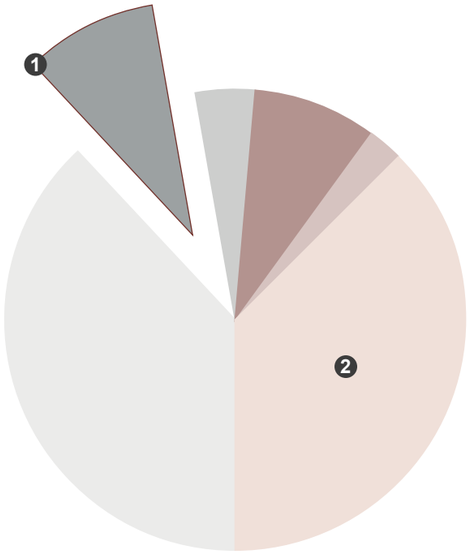
Challenging the brief

Before and after



Original brief

	Primary care	1079,50 m²
	Family centre	69,00 m²
	Dental care	240,00 m²
	Common spaces	109,00 m²
	Others: circulation, corridors, technical areas, walls and structure	1502,50 m²
		TOTAL 3000,00 m²



Our proposal

	Primary care	1127,36 m²
	Family centre	72,75 m²
	Dental care	255,37 m²
	Common spaces	125,15 m²
	Additional spaces	276,06 m²
	Others: circulation, corridors, technical areas, walls and structure	1129,43 m²
		TOTAL 2986,12 m²

Unused basement spaces

	Unused basement spaces for later extension	364,00 m²

1 Additional spaces

Public, multi-generation-café	**247,60**	**m²**
Staff sauna	16,12	m²
Staff additional coffee corner	12,34	m²

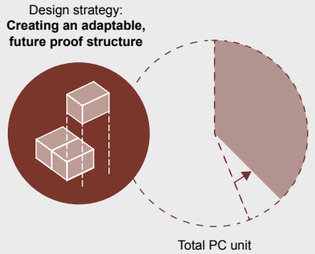
According to our challenge of the brief, we added extra floor space to implement our multi-generation café. Moreover we also added a sauna room and a coffee corner for staff members.

Design strategy:
Creating attractors

2 Examination rooms and waiting area

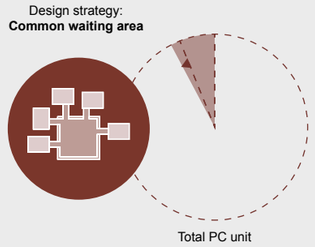
Examination rooms old	~~484,00~~	~~m²~~
Examination rooms new	414,39	m²

In order to create a floor plan layout that allows for easy changes, we merged all different examination room types into one standard room for both, administrative work and examination.



Separate waiting rooms old	~~65,00~~	~~m²~~
Combined waiting area new	83,00	m²

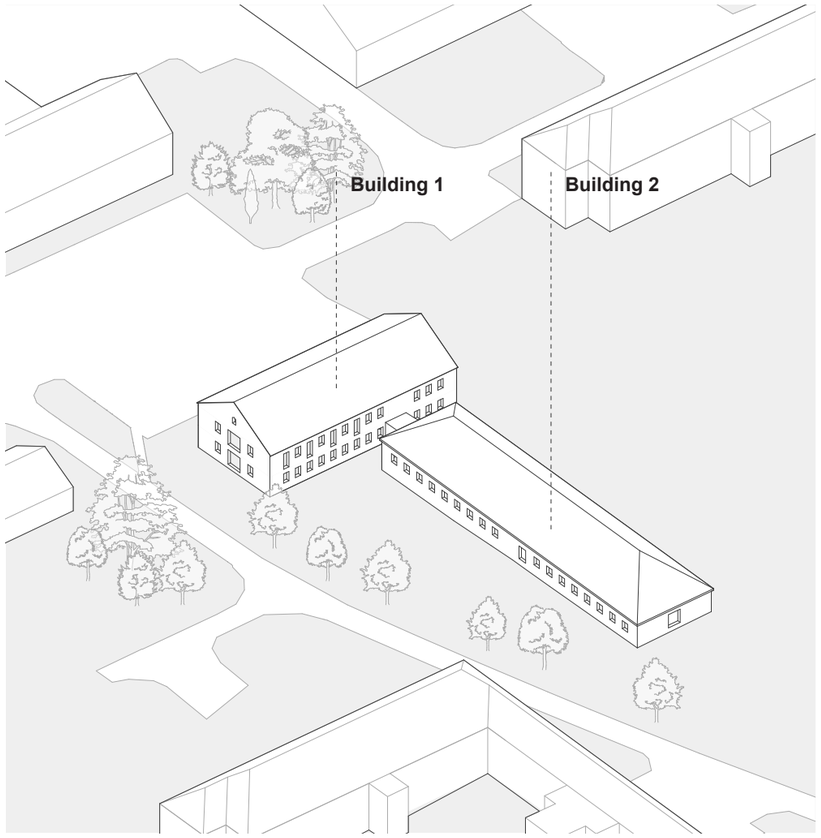
Our intention to create a combined, generous waiting area led us to adding additional square meters to our waiting zone compared to the original brief.



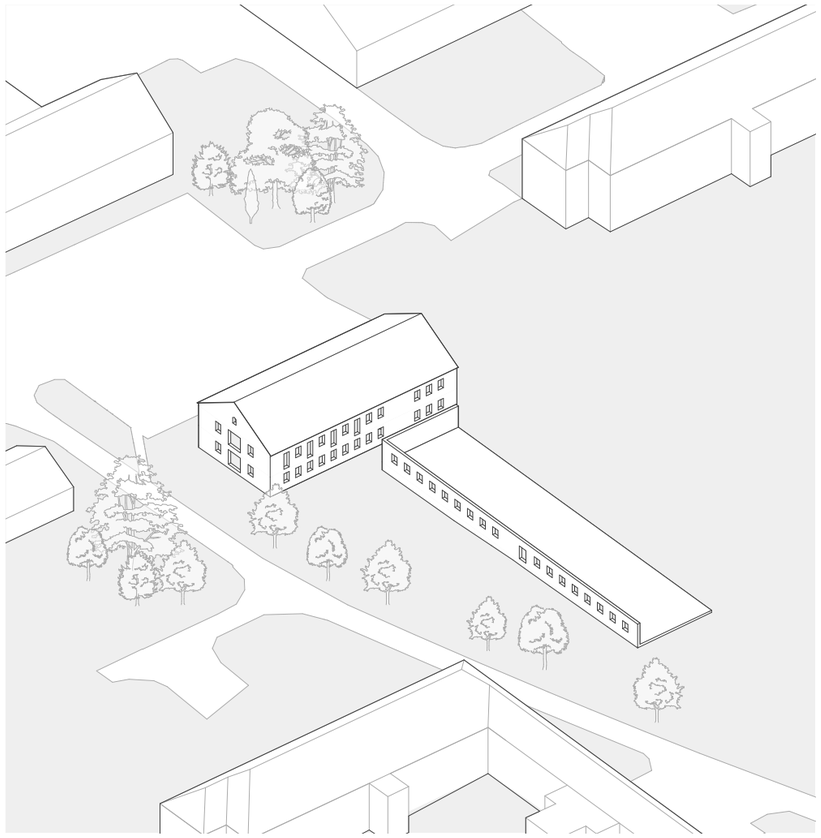
Part 2

Design proposal

Design concept
Existing buildings



Before intervention



After intervention

Should building 2 be kept?

Pro:

- Strong structure, a floor can be added
- Lots of embodied energy
- It has a basement (which could not be added to a new structure, according to the town's detail plan)
- It fits the surrounding architecture

Contra:

- Not wheelchair-accessible
- No thermal insulation
- No inviting entry situation
- Too low ceiling heights to fit building services such as ventilation
- Narrow typology with long corridors

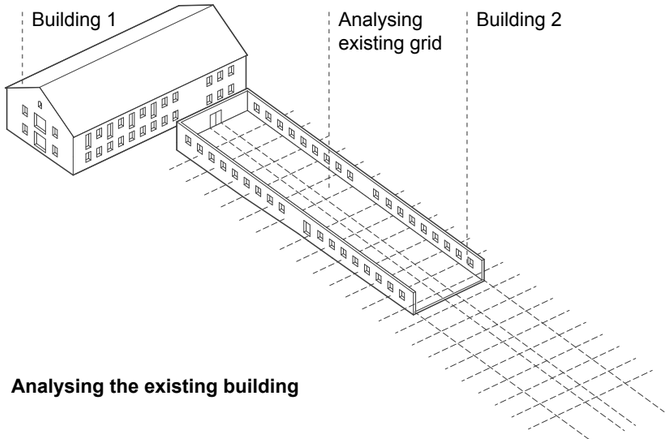
Conclusion and measures:

- Major parts of the building should be kept considering sustainability
- An additional floor as well as an extension must be added to fit the brief
- The top ceiling should be removed to allow for higher ceilings
- Major changes are necessary to create an inviting, wheelchair-accessible entry situation from both sides of the building
- The northern façade should be removed to allow for a wider typology
- All added parts should be a reinterpretation, but not a copy of the surrounding architectural style

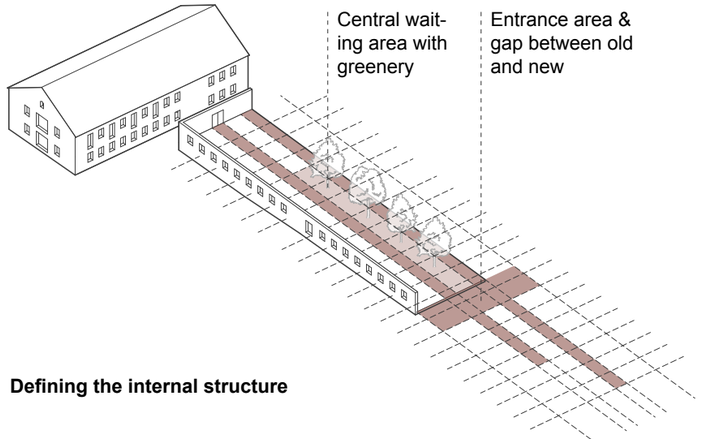
Existing structures on the site

The two buildings that are currently on our site were part of the original hospital area, built in the 1960s. Keeping building 1 was already determined in our task description. Whether to keep building 2 or not was a main question in the early stages of our design process. In accordance with the ideas of sustainable architecture, we eventually decided to keep building 1, facing Birgitta square, entirely, as well as major parts of building 2, like the basement, foundation and parts of the façade.

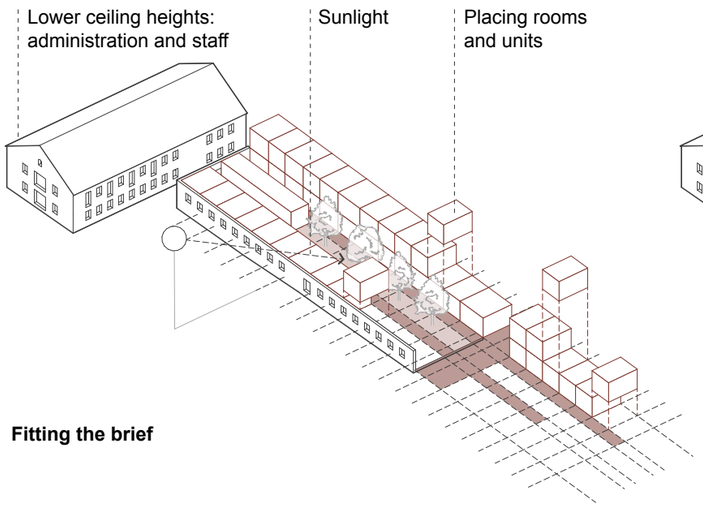
Design concept
Development



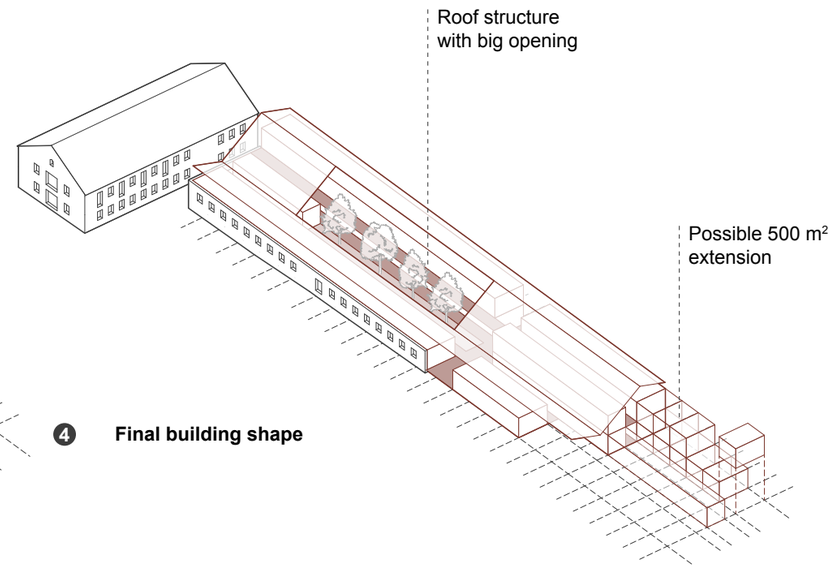
❶ **Analysing the existing building**



❷ **Defining the internal structure**



❸ **Fitting the brief**



❹ **Final building shape**

❶ **Analysing the existing Building**

We started designing by analysing the structural grid of the existing building, and kept this grid for our extensions.

❷ **Defining the internal structure**

Regarding the two main directions to approach the building, we decided to place the entrance axis with two entries from both, the north and the south. The southern entrance area articulates a gap between the preserved façade and our addition.

Removing the northern façade allows for a more generous typology, with a wide inner space to accommodate our waiting area. According to our design strategies, this zone should feature greenery, creating a connection between inside and outside.

❸ **Fitting the brief**

The internal structure is organised in two rows of rooms on the north and south side of the edifice. The northern part has two floors, while the southern part is only one floor high, to allow for sunlight to reach deep into the building and to illuminate the central waiting area.

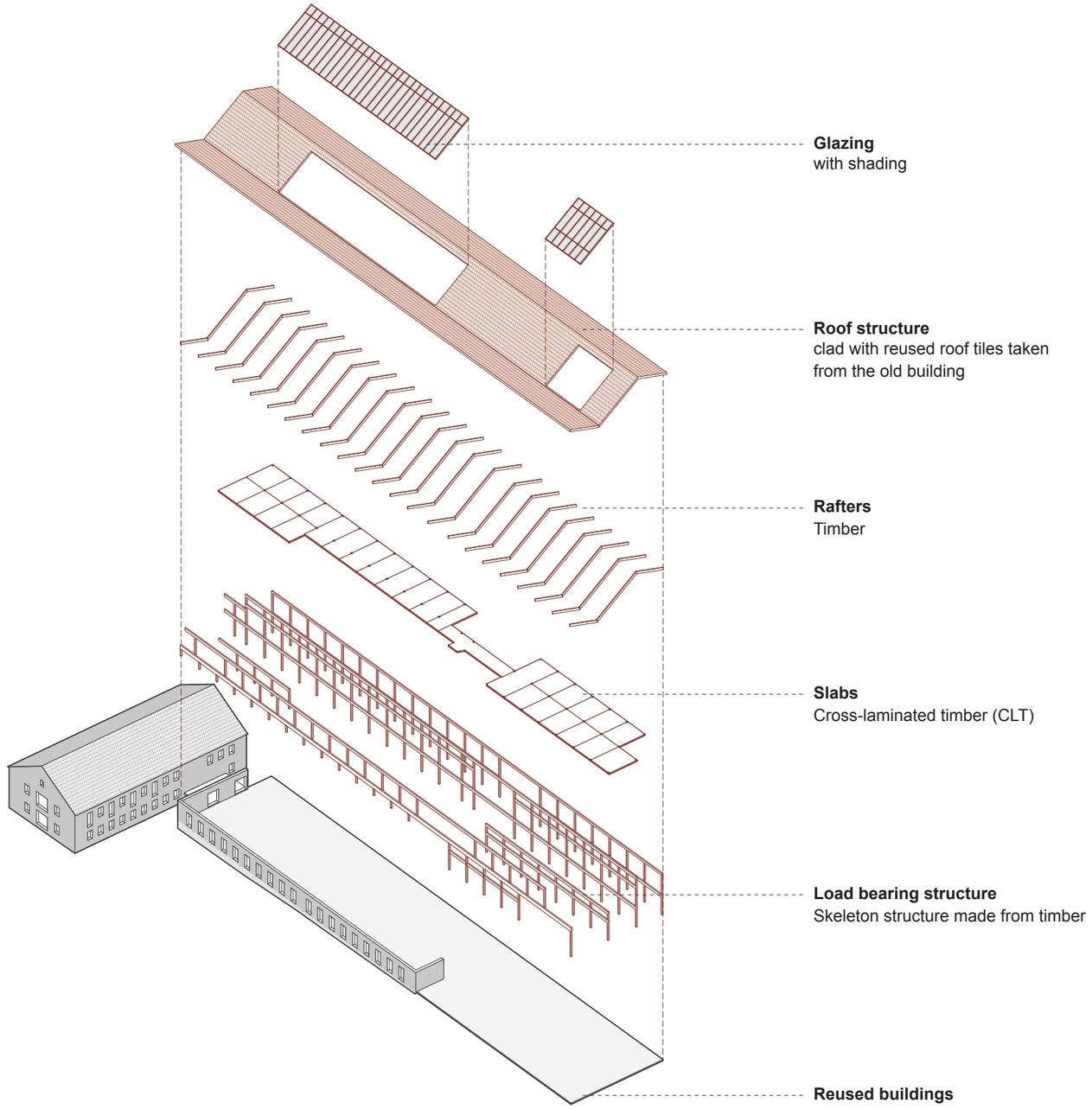
Because of it's lower ceiling height, building 1 is not suited to accommodate examination rooms, due to their higher demand for technical spaces. Therefore we decided to place all administration and staff areas there.

❹ **Final building shape**

These two rows are covered by a roof, uniting them to become one shape. The roof shape is a reinterpretation of the gabled roofs in the surrounding area. A big glazed opening lets light penetrate the envelope.

An additional 500 m² can be added by continuing this system further to the east.

Design concept
Structure



Timber skeleton structure: Steico headquarter, Feldkirchen, Germany

Cross-Laminated timber slabs: KLH system

An adaptable, future-proof structure

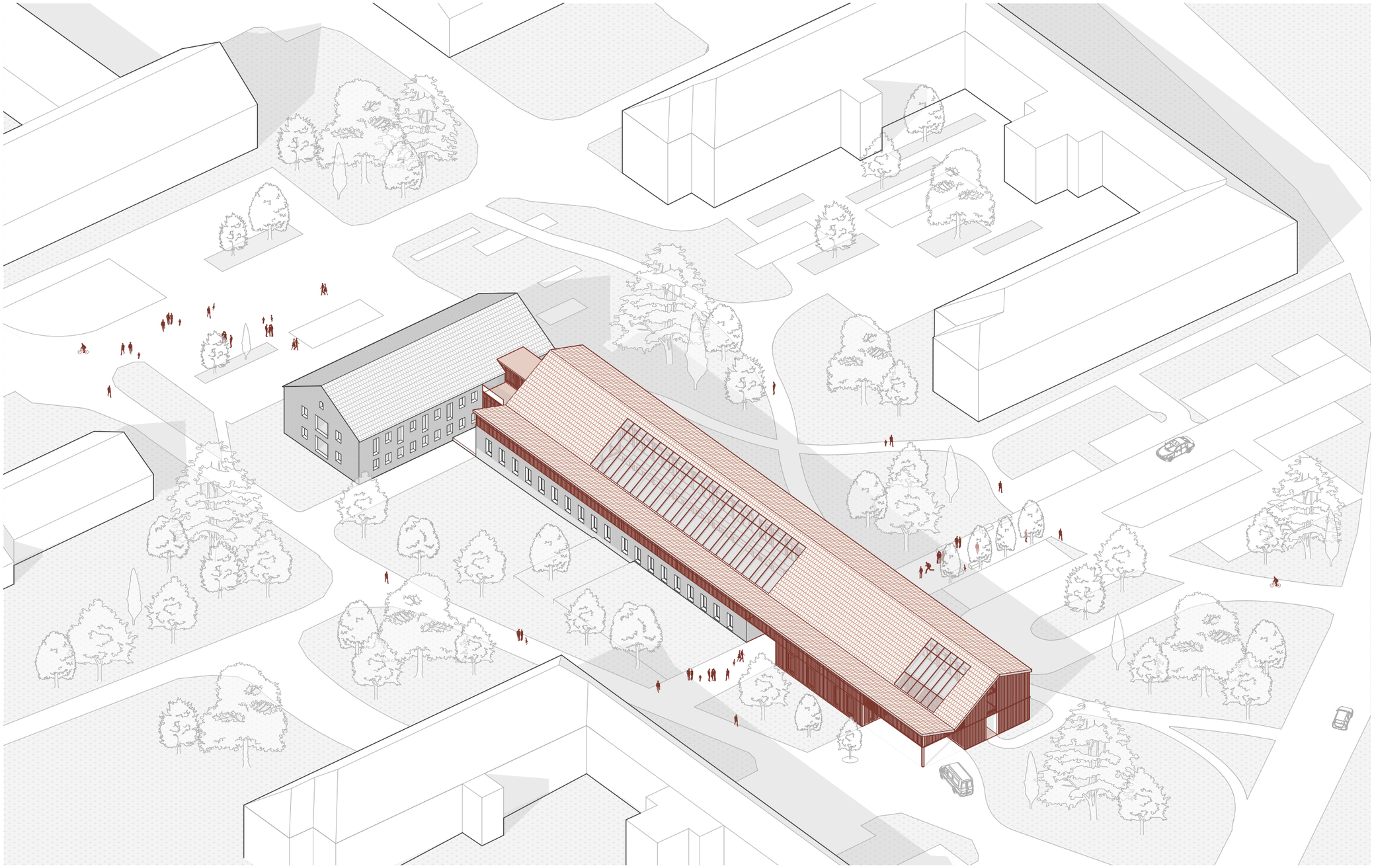
In accordance with our design strategies we tried to design a building structure that is sustainable, durable, and easy to adapt. We decided to use a timber-skeleton system combined with slabs made from cross-laminated timber, keeping the structure free of load bearing walls and allowing for changes of the internal partitioning walls.

Design strategy:
Reusing existing buildings

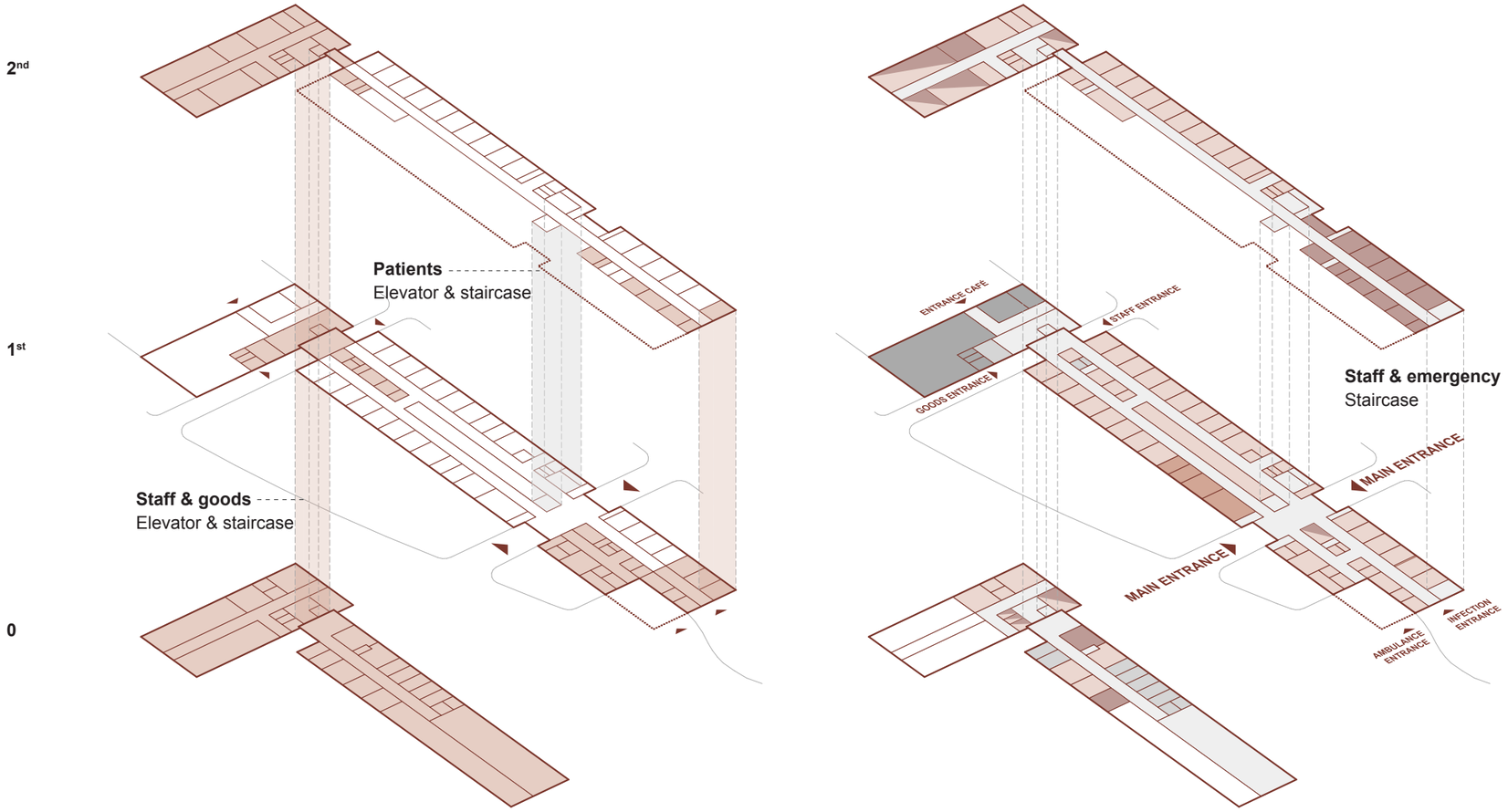
Design strategy:
Creating an adaptable, future-proof structure

Design concept

Axonometry



Zoning



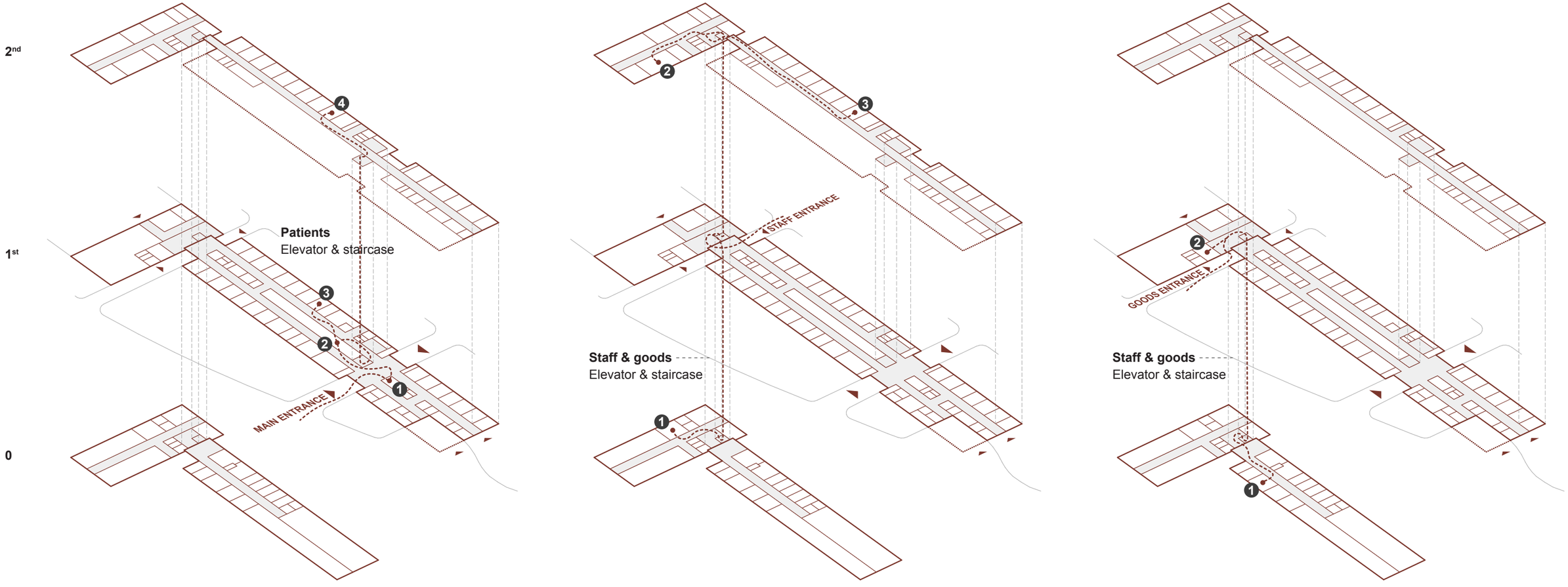
Access

- No public access: staff and administration, storage
- Public access: examination rooms, waiting area

Departments

- Primary care
- Family centre
- Dental care
- Common spaces
- Multi-generation café
- Others: circulation, corridors, technical areas
- Unused basement spaces for later extension

Flows



Patient flow

1. Checking in at the reception
2. Taking a seat in the waiting area
3. Going to the laboratory
4. Getting examined in the doctor’s examination room

Staff flow

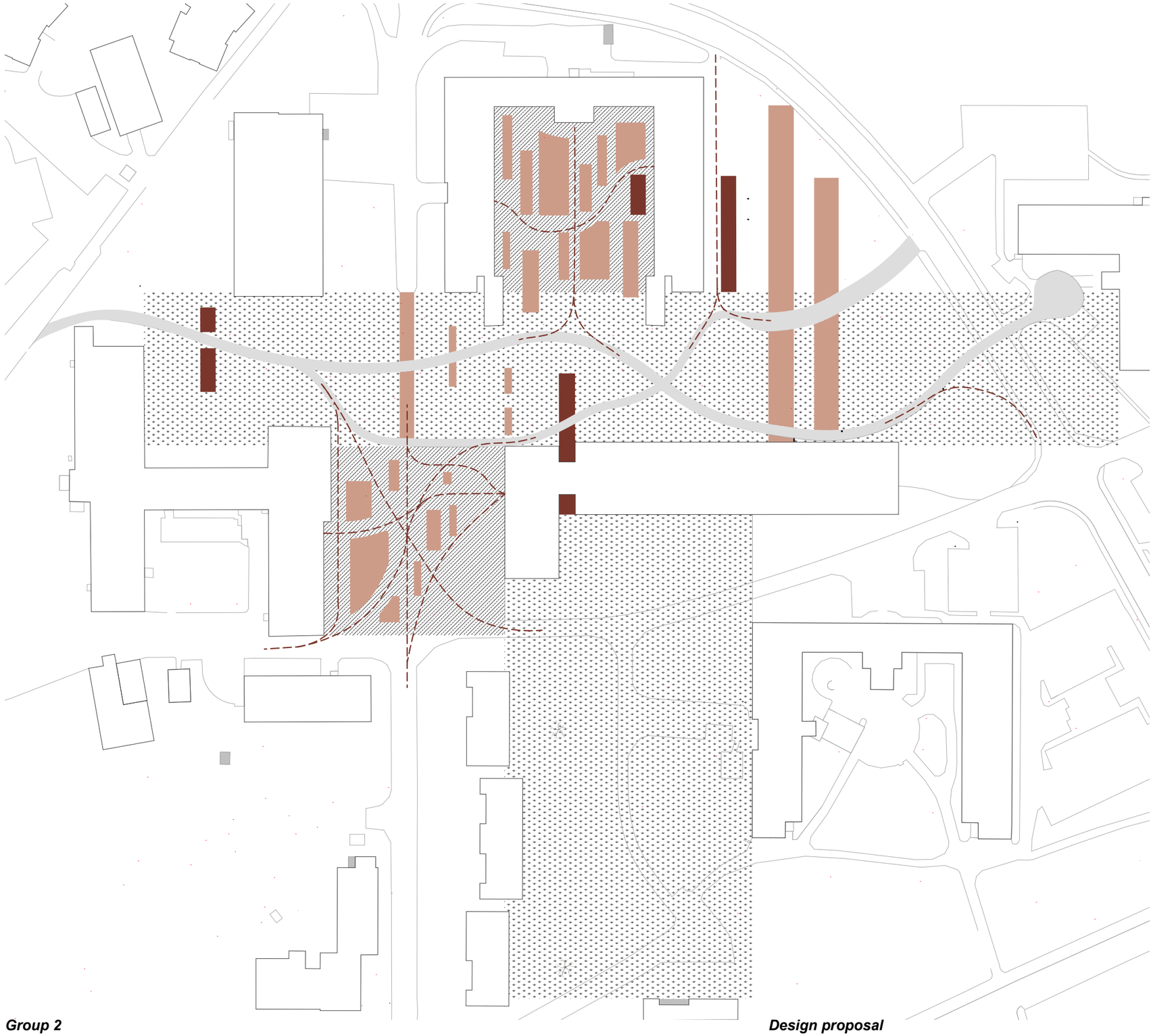
1. Changing clothes in the dressing room
2. Morning meeting in the conference room
3. Going to the examination room

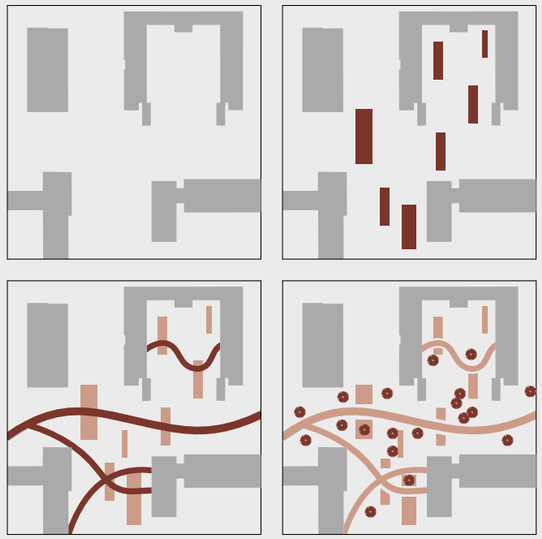
Goods flow

1. Delivering material to the main storage room
2. Picking up waste in the recycling room

Landscape design

Concept





Landscape design concept

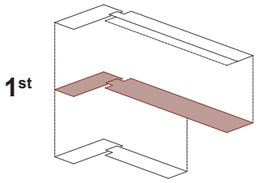
We started the landscape design process by identifying the large cohesive green spaces and square-type spaces that we wanted to focus on and that created divisions in the area.

Our design creates a stretched out horizontal green space that is essential for the pedestrian walkways in our proposal, which also connects the two square-type typologies of Birgitta square and the inner courtyard of the building to the north. We then worked with a landscape design strategy connecting spaces through vertical rectangular volumes and having horizontal, meandering paths cutting through them and connecting the spaces in between.

Site plan

Floor plans

Ground floor



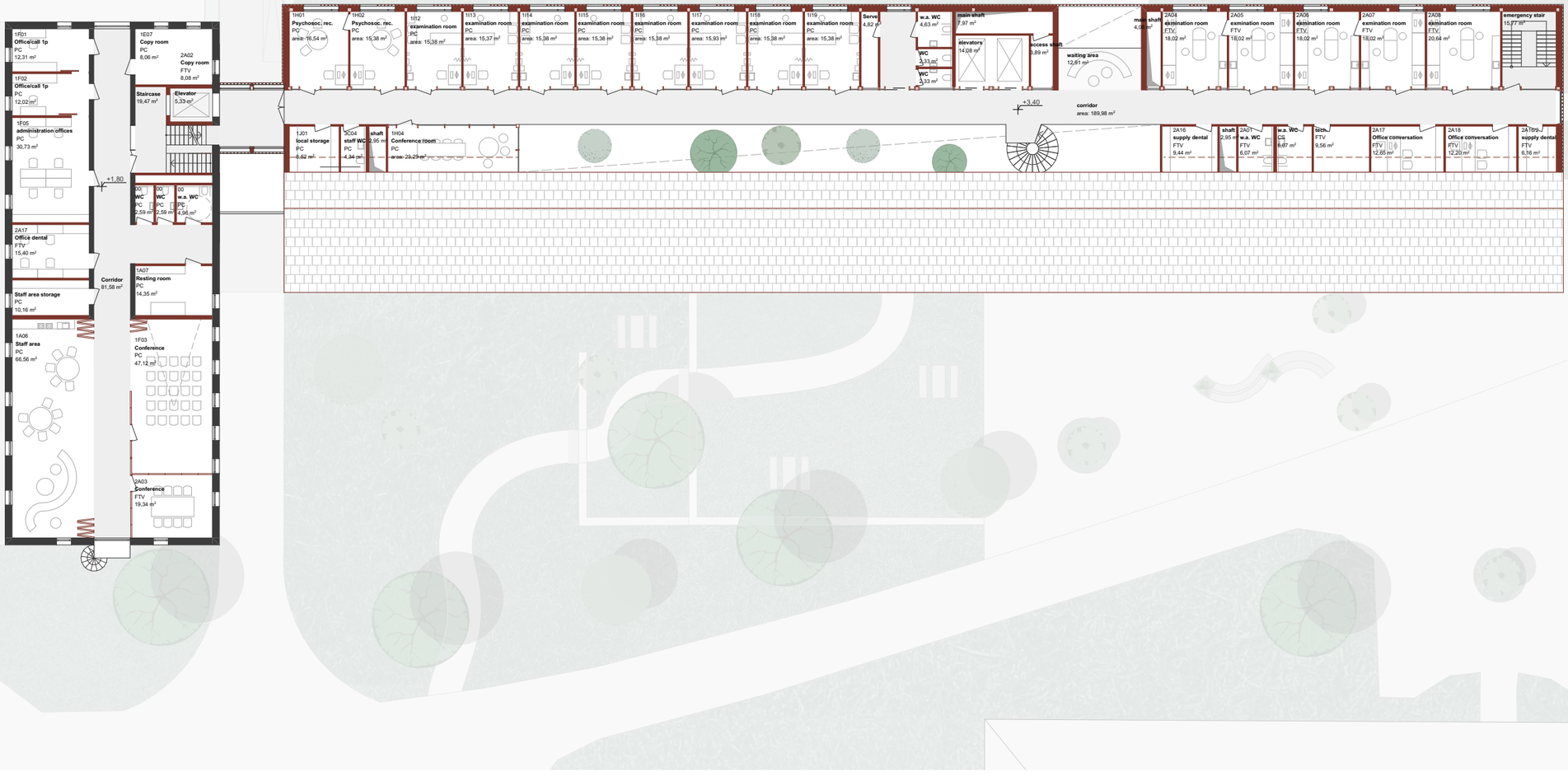
1 : 300

0 2 5 10 15

Floor plans

Second floor

2nd



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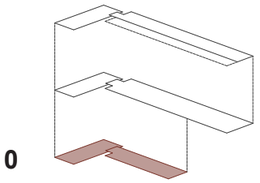
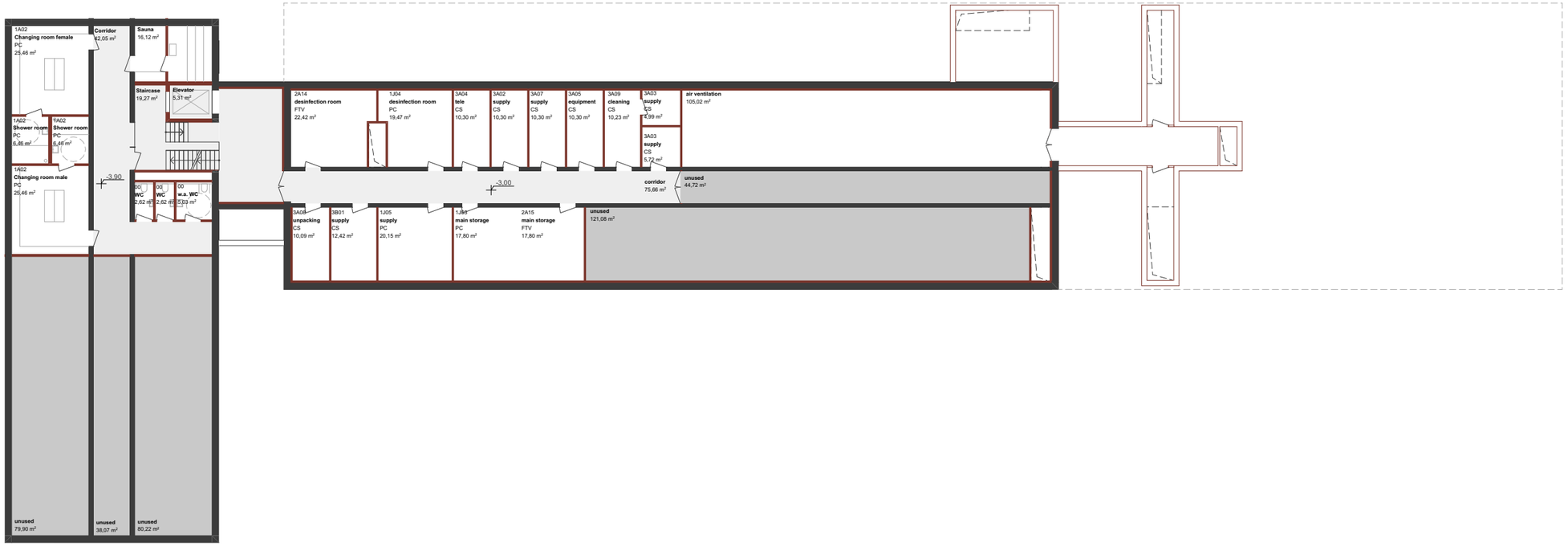
0 2 5 10 15

Floor plans

Basement



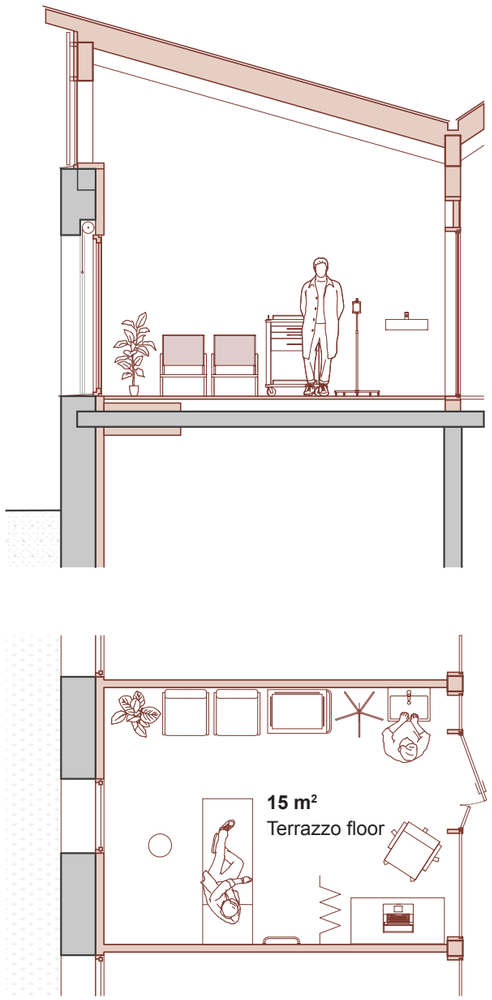


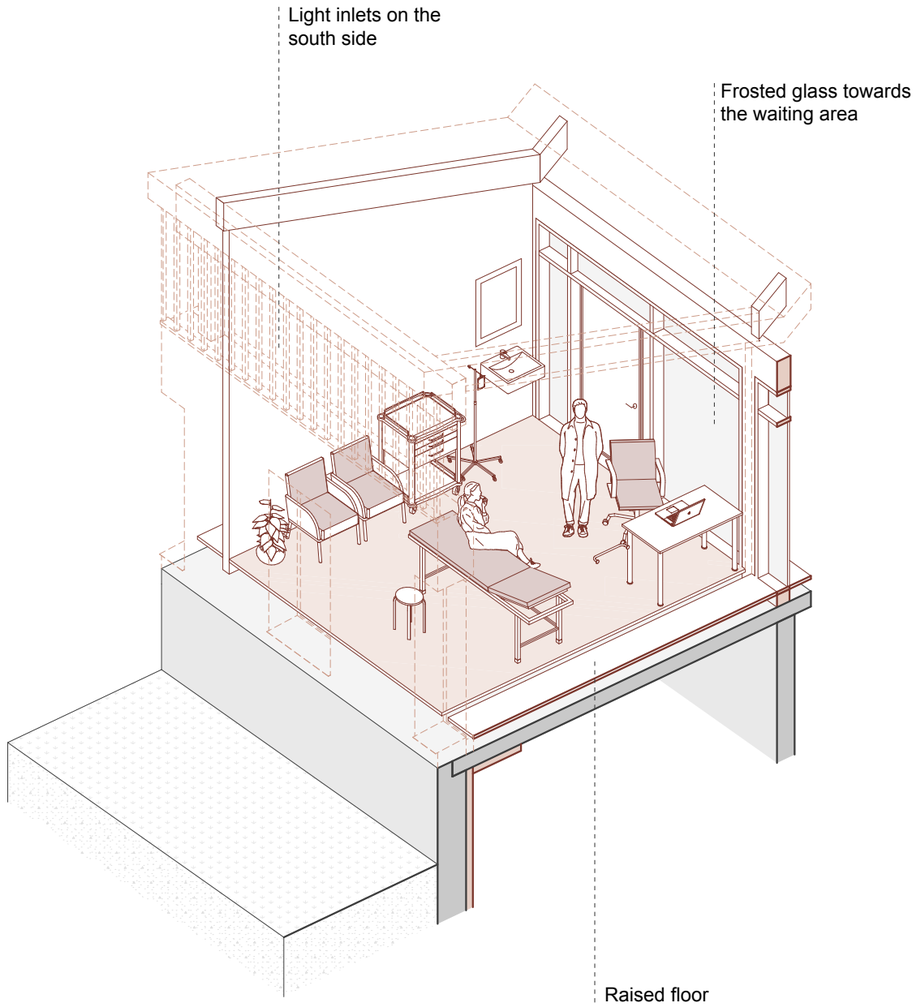
0 2 5 10 15

1 : 300

Standard examination room

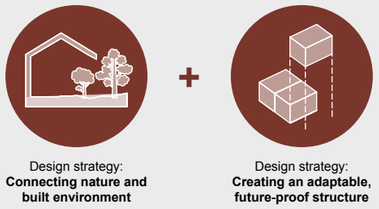
Primary care





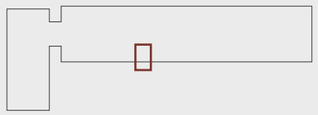
One size fits all

In order to create a floor plan layout that allows for easy changes, we merged all different examination room types in the primary care unit into one standard room for both administrative work and examination. Big window openings connect the interior to the surrounding land-scape. On the southern side inlets let the sunlight pass. Frosted glazing towards the waiting area makes the internal wall appear lighter and more open.



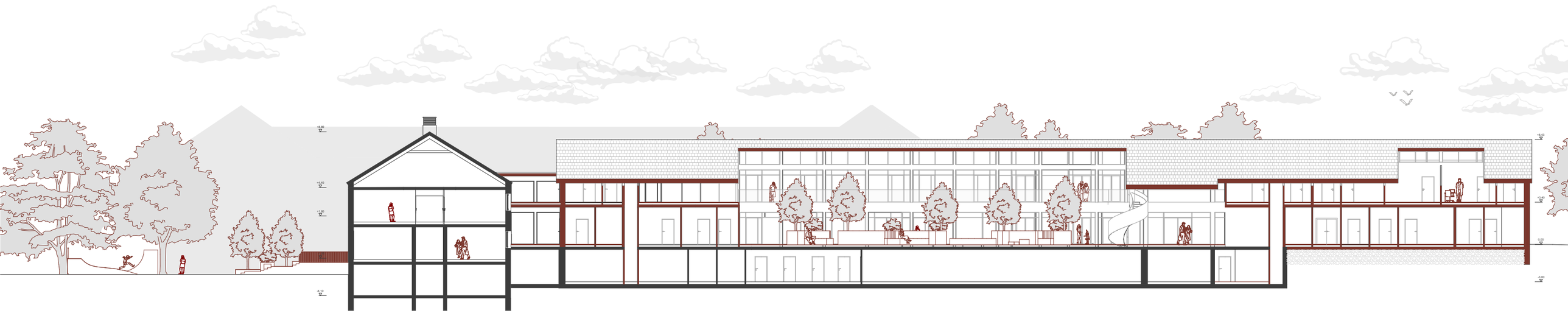
Design strategy:
Connecting nature and built environment

Design strategy:
Creating an adaptable, future-proof structure



Sections

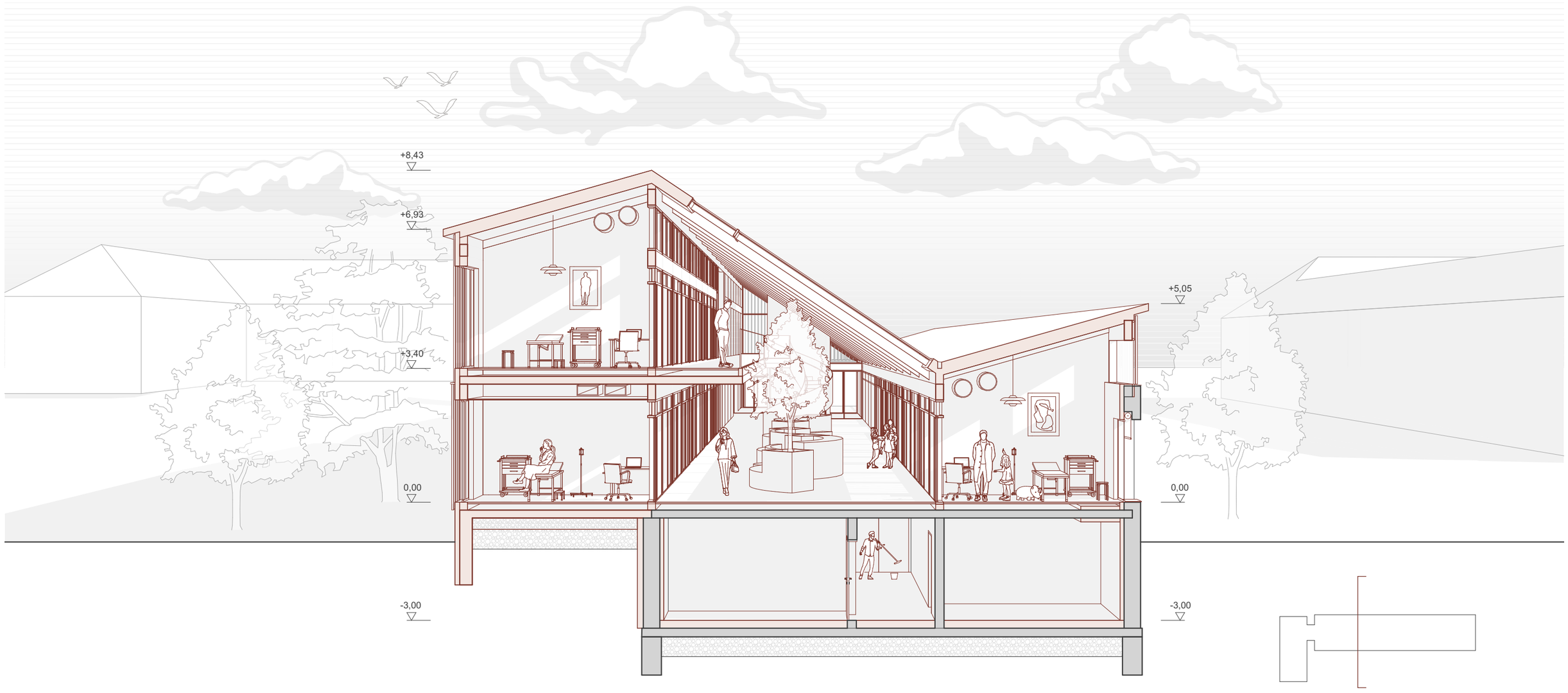
Longitudinal section



0 2 5 10 15 1 : 300

Sections

Perspective section



0 1 2 5 1 : 100

Common waiting area

Gallery corridor, second floor

Waiting area dental care

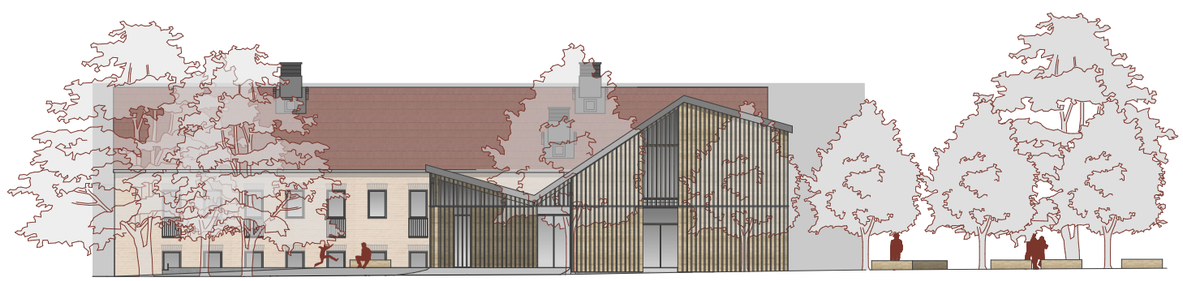
Corridor, second floor

Façade

Elevations

Elevation south

Elevation north

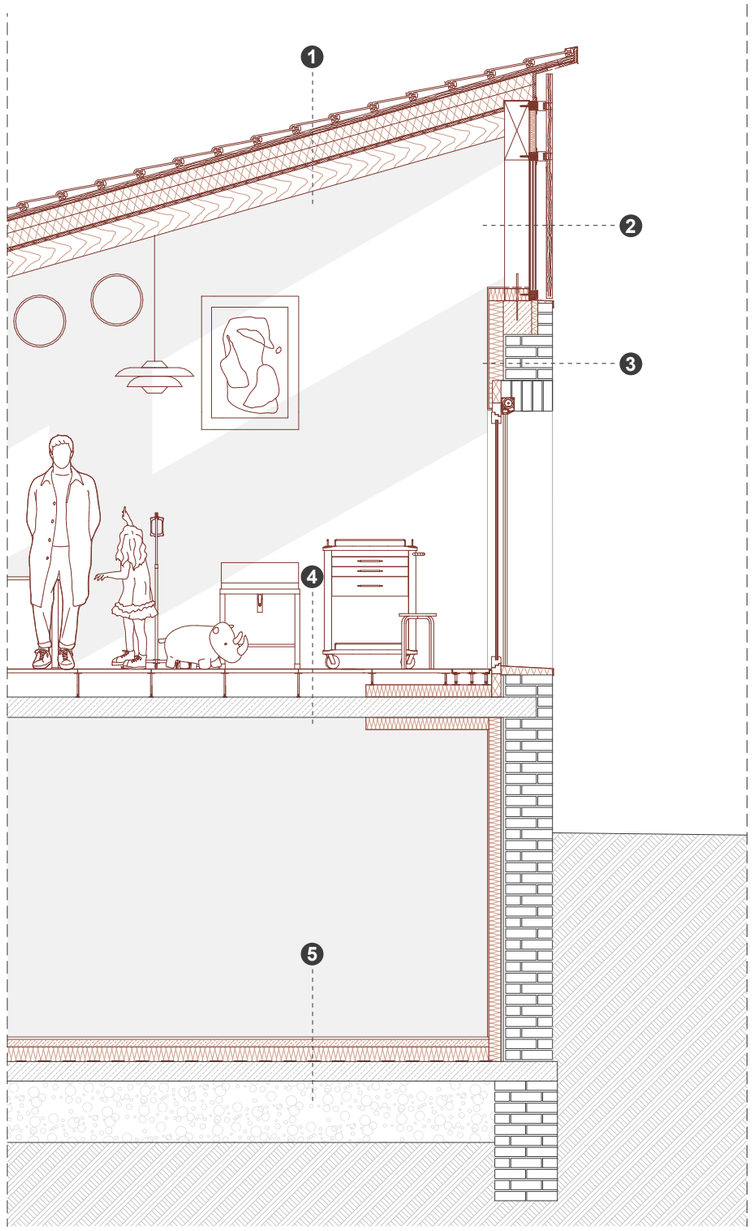


Elevation east

0 2 5 10 15 1 : 300

Façade

Detail section



1 Roof

Reused roof tiles	
Battens, timber	3,00 x 5,00 cm
Counter battens, timber	4,00 x 5,00 cm
Windbreak, foil	
Insulation, mineral wool	20,00 cm
Vapour barrier, foil	
Boarding, timber	2,40 cm
Rafters, timber	35,00 x 12,00 cm

2 Façade light inlet

Slats, timber	4,50 x 4,50 cm
Triple glazing	5,00 cm
Column, timber	20,00 x 20,00 cm

3 Façade

Wall paint, eggshell yellow	
Slurry coating	2,00 cm
Existing brick wall	42,00 cm
Insulation, foam glass	12,00 cm
Plasterboard	1,25 cm
Interior plaster	1,50 cm
Wall paint, white	

4 Ground floor

Terrazzo covering	
Dry hollow floor modules	2,85 cm
Technical space, steel supports	17,15 cm
Existing slab, reinforced concrete	17,00 cm

5 Basement floor

Sealed screed	8,00 cm
Separating layer, PE foil	
Insulation	12,00 cm
Seal, foil	
Bottom slab, reinforced concrete	17,00 cm
Loose filling	

0 0,5 1 2

1 : 50

Approaching the building from the north-east

Approaching the main entrance from the north

Approaching the ambulance entrance from the south east