

# Studenti na Slupi

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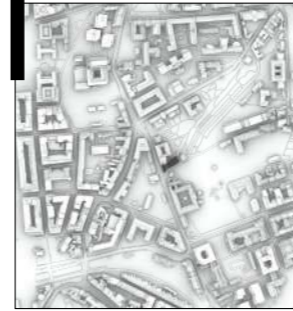
## Abstract:

With time, Prague has been facing the ever growing issue of abandoned architecture. Despite a few examples of adaptive reuse, the trend to build new still remains. This project aims to bring attention to the number of such buildings and provide an innovative example of how these dis-used places can be transformed. This emphasis on sustainability and adaptive reuse in architecture is crucial for addressing urban challenges.

The project focuses on an atypical building in Albertov, which was originally built to be used as a spa. Working with the natural character of rooms in the upper floors and open floor plans in those below it, the project strives to rework this building into student housing. Through a vertical extension with modern elements and the incorporation of a glass atrium, the structure gains monumental character, bringing it out of its dimple in the steep slope it currently sits in. The new program creates a communal space for students to live, work and relax whether it be in their own spacious rooms, communal spaces throughout each floor, roof gardens or sports facilities.

This re-purpose seeks to enhance the neglected built environment and reduce the challenge faced by students in finding comfortable housing by providing a new program and dynamic in a forgotten building.

# 1



## Site

Site Plan  
Site Impressions  
Surroundings

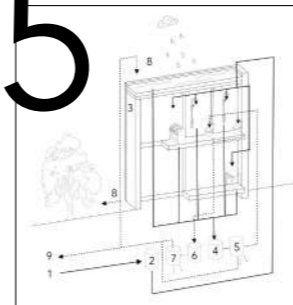
# 3



## Program

Typical Residential Floor  
Ground Floor  
Basement

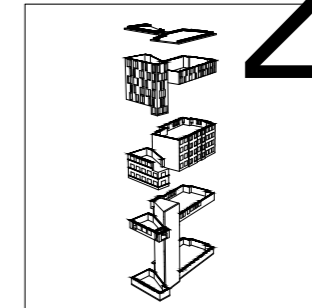
# 5



## Technical Details

Gray Water System  
Construction Details  
Technical Report

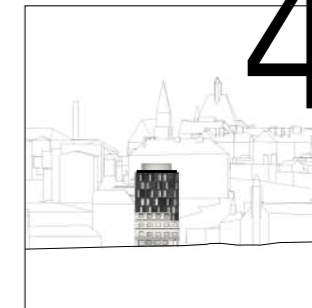
# 2



## Concept

Massing Diagram  
Before - After  
Axonometry  
Sections

# 4



## Overview

Perspective  
Garden View  
Elevations



## Site

The chosen site for the project is a spa complex, originally built in the late 1920s and already reused as apartments in the 1970s, until being left completely abandoned in the early 2000s.

The Building is heavily surrounded by gymnasiums and universities, a hospital complex and parks of the botanical garden and Karlovo Náměstí.

A tram stop right in front of the building allows for easier access to the rest of the city as well as a larger transport hub walking distance away.

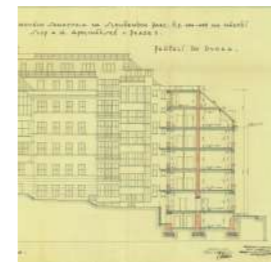
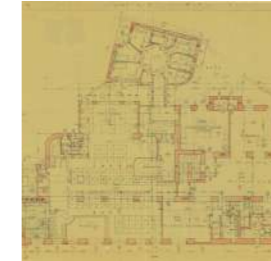
The structure is situated on a steep slope, causing the floors to be offset as the building follows the hill. Furthermore, this causes half of the ground floor towards the back to be underground. The front of the building is connected to a rather frequented street used by cars, trams and pedestrians, whereas the back of the building is connected to the large park of Prague's botanical garden.



## History

The building was built in 1928, designed by the Czech architect Jan Jeroním. Its original purpose, which successfully ran in the building until the 1970s, shaped the interior layouts of the building. The ground and basement floors follow an open plan to allow for space for pools and baths with an exceptional character of the building being the glass domed bath addition in the courtyard of the building.

After the spas discontinuation in the 70s, the building's existing rooms in the upper floors allowed for them to be rented out as apartments. With a new owner, and a new ambition to turn the building into a hotel, the last tenant was encouraged to move out in the early 2000s. Despite the various owners and plans since then, the building has been neglected and is now in a deteriorating state.



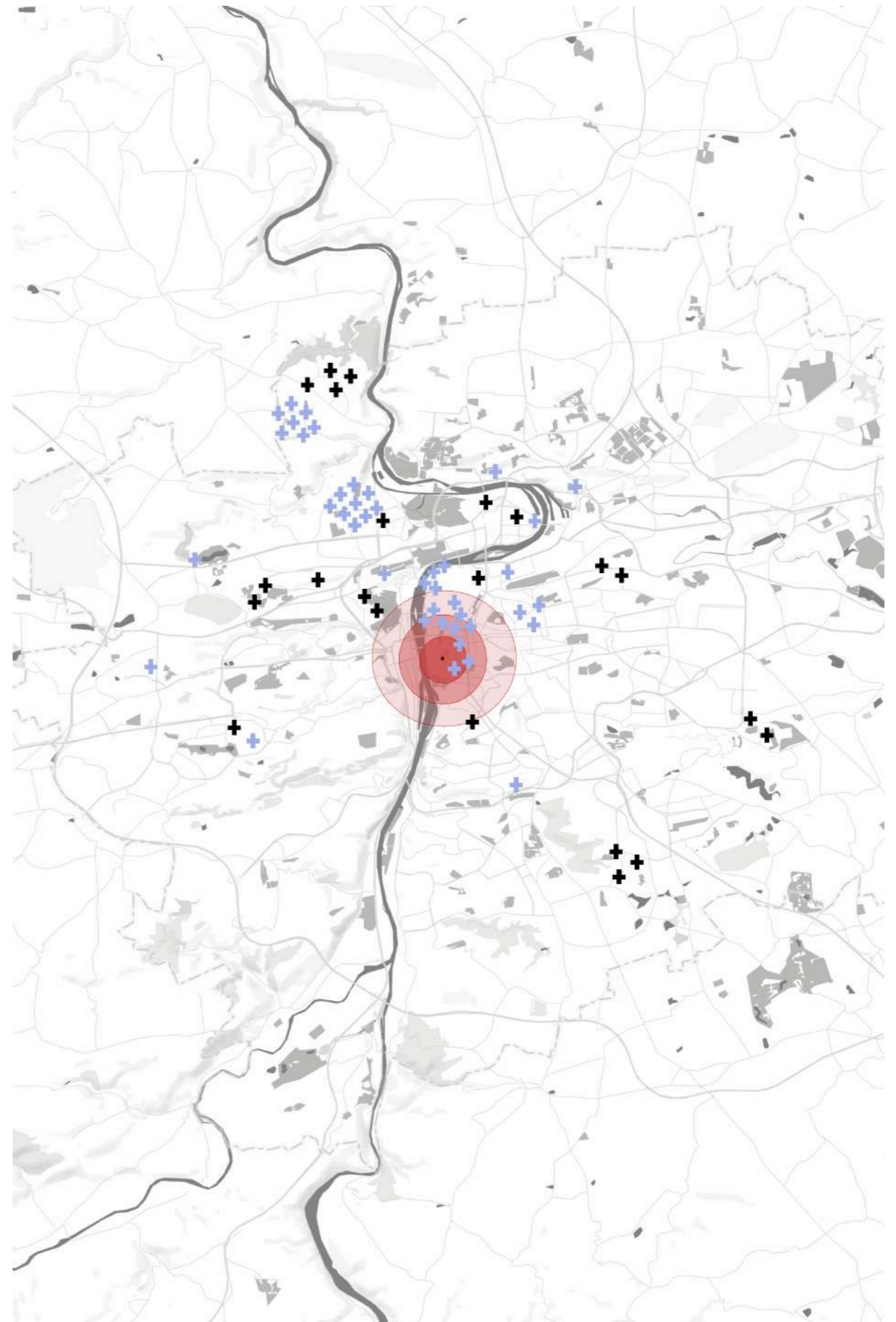
Site Impressions



## Surroundings

The map shows, in red, the 5, 10 and 15 minute walking distances around the building. The accessibility to the surrounding universities from the site is one of the strongest aspects of the building, providing an ideal location for students to live in near proximity to their school.

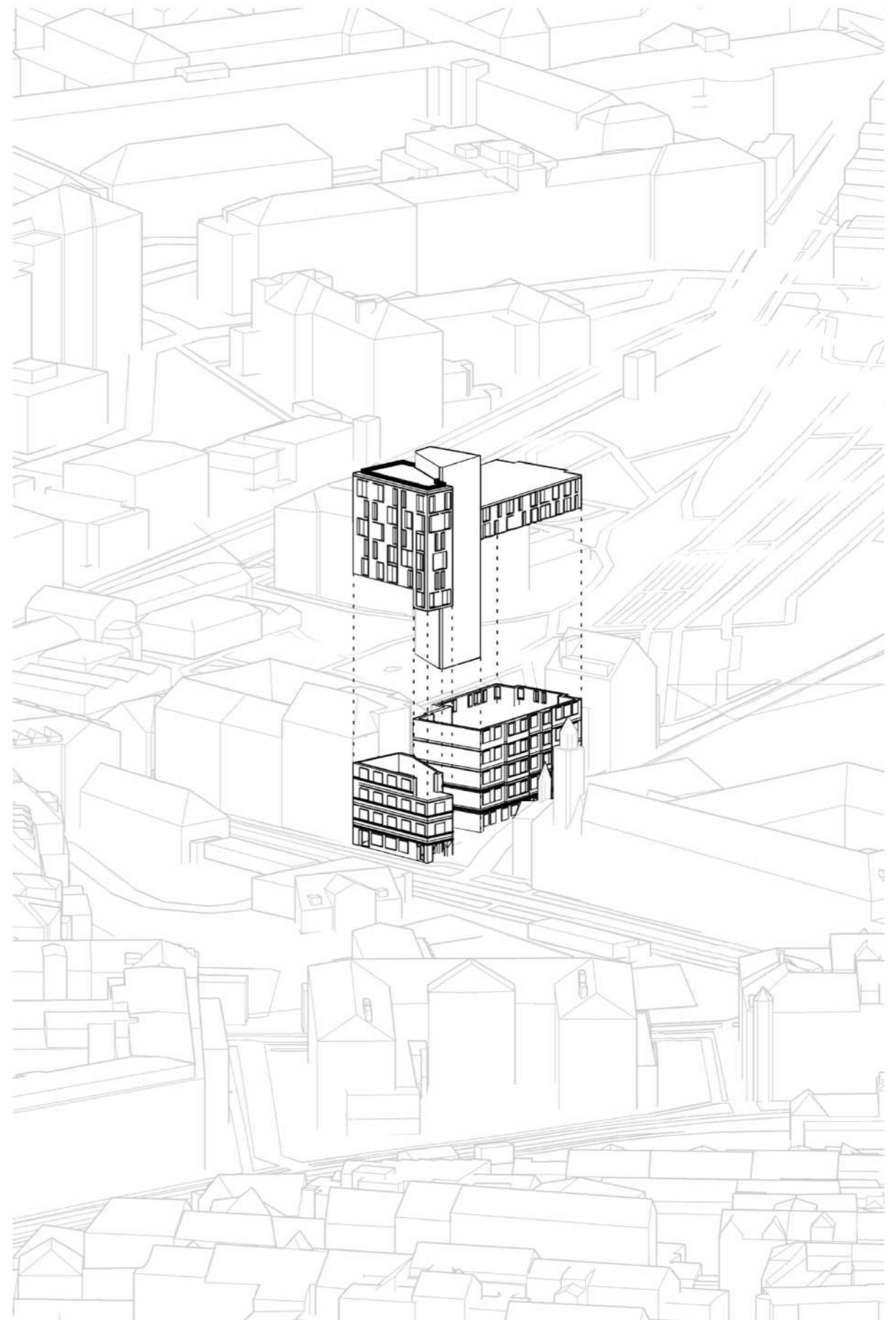
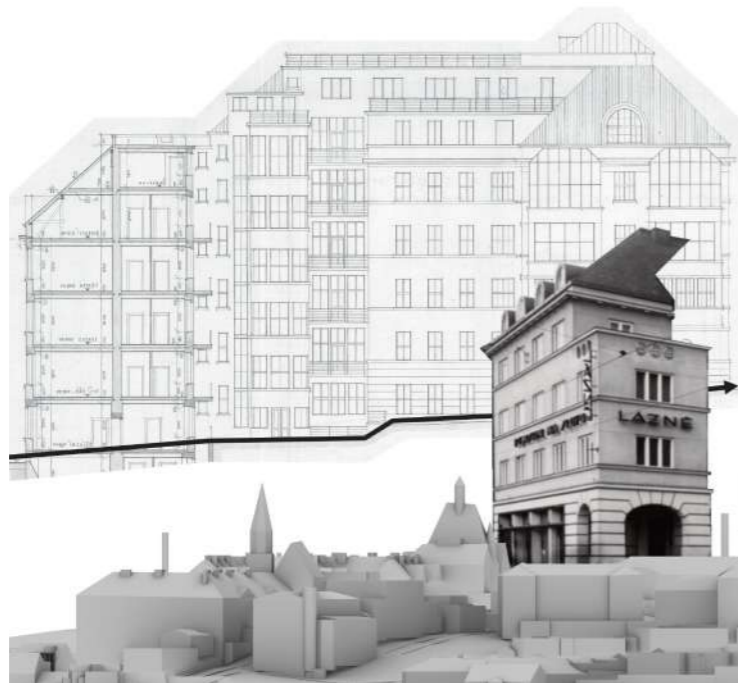
Furthermore, the map marks in blue the surrounding universities and in black the existing dorms. The current situation in Prague is that there are 4 students per 1 bed in student housing, which is another issue this project strives to address.



# 2

## Concept

The concept of the project is to create 3 primary aspects of the design. Firstly, the design aims to work with the slope that is a significant factor on the site. It does so by mirroring the slope in the heights on the buildings. Secondly, the design aims to extend the building to meet the heights of the surrounding structures, making it more significant and less lost in the site. Lastly, it aims to preserve the history and existing parts of the building where possible.



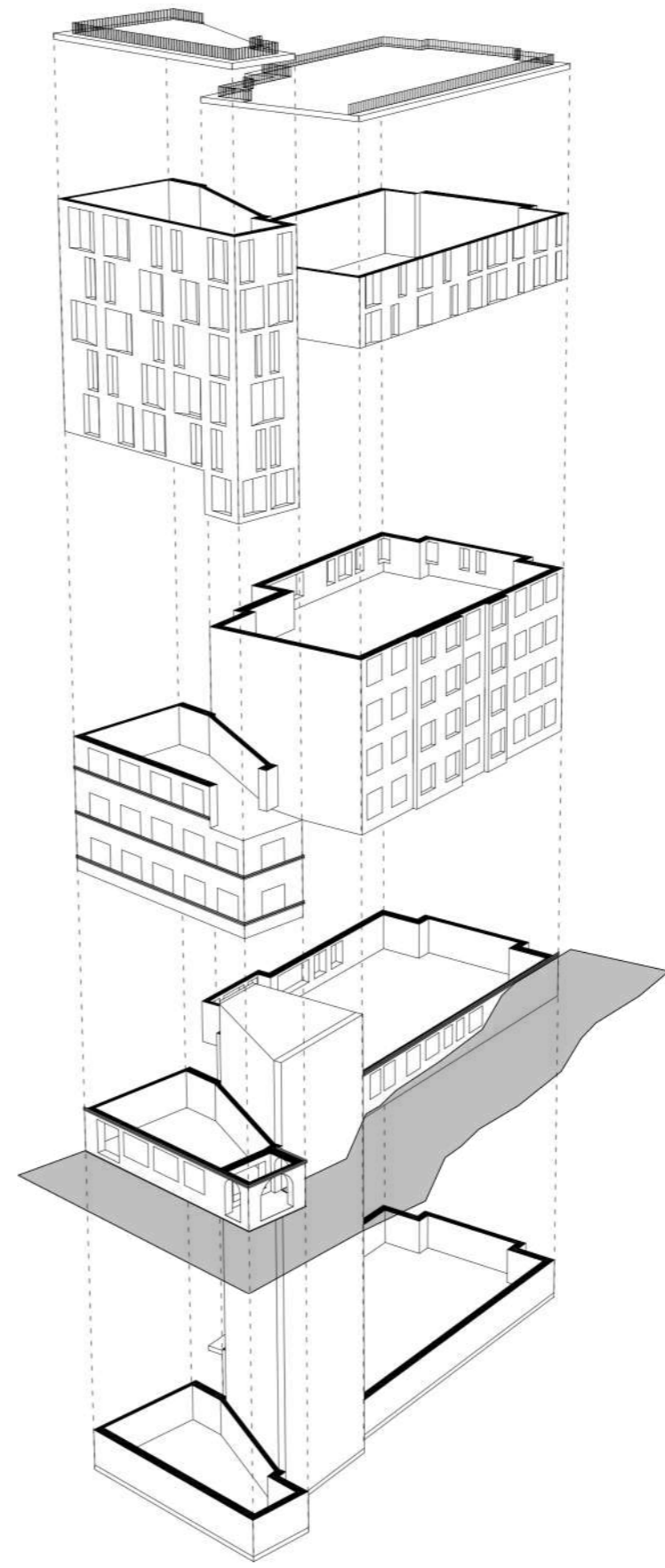


BEFORE



AFTER





Roof Garden 1

New Additions -  
Student Dorms 2

Existing Building -  
Student Dorms 3

Existing Building -  
Cafe  
Laundry Room  
Gym 4

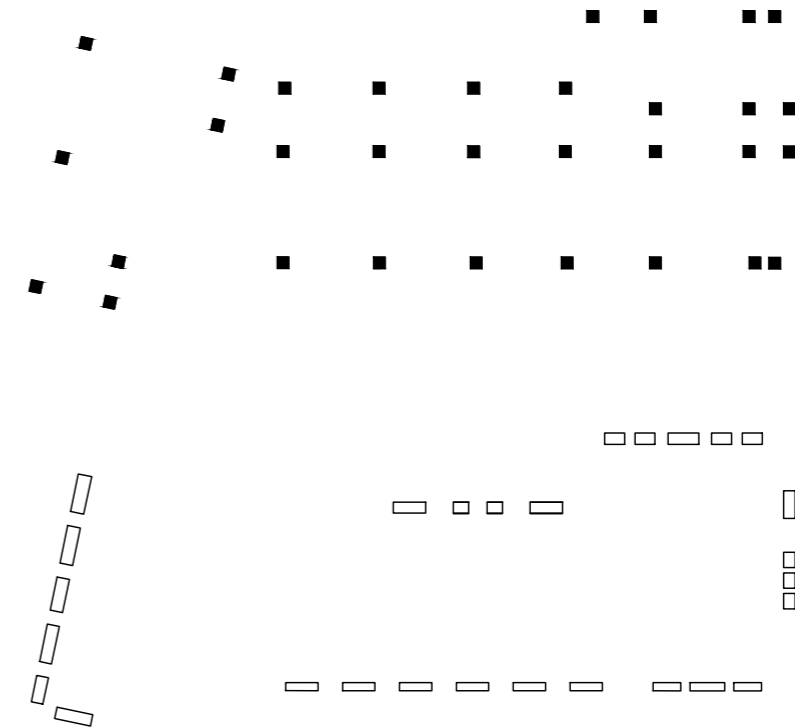
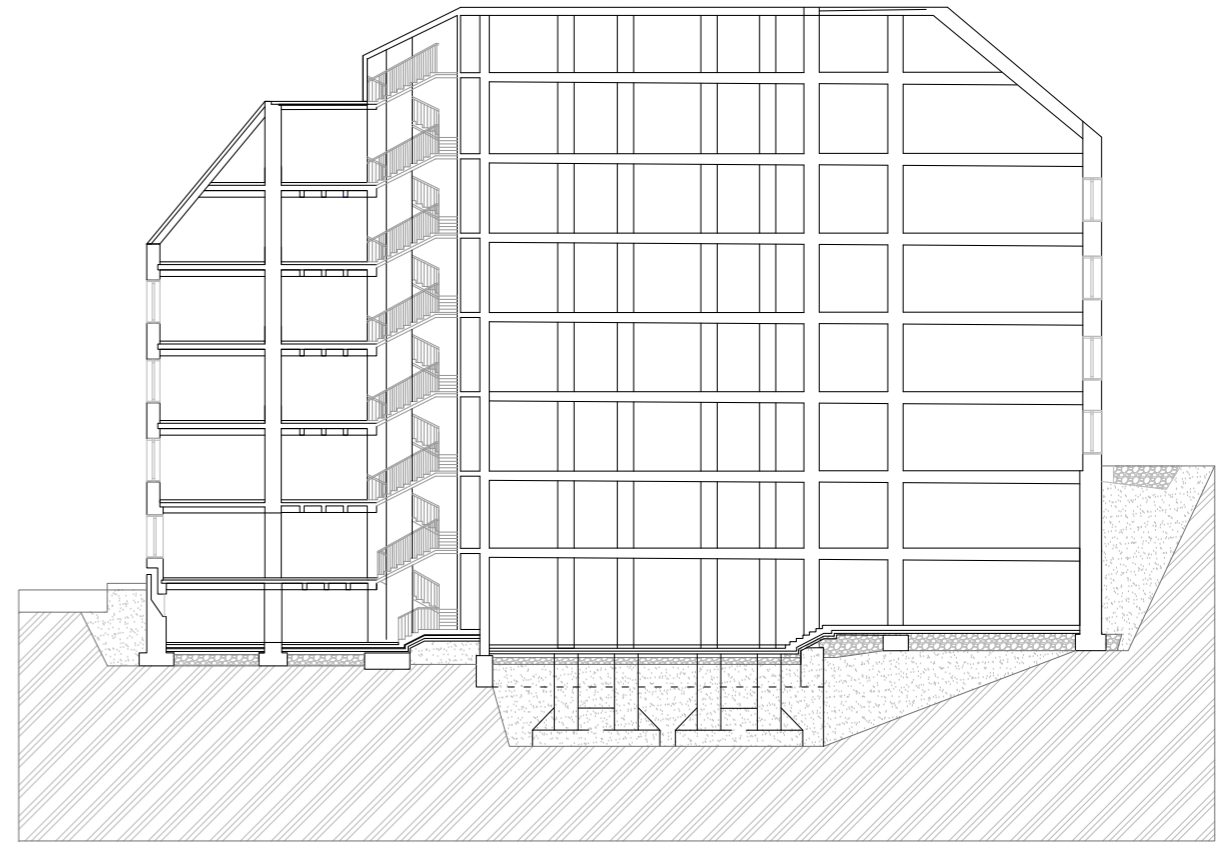
Existing Building -  
Pool 5

### Current Situation/ Considerations

Most of the current building is structurally safe, with the small exception of the glass dome in the courtyard. The walls are tall with a floor to ceiling height 3.4 meters, which was a typical feature of its time. The layout of the student dorms within the building had to take into consideration the existing columns and windows, in order to generate as many comfortable rooms as possible. As a consequence of the sizable width (750 by 750) of the existing columns the existing building sets a solid base for the addition of a new structure.

In plan and section the building is separated into three parts. The first is connected to the street "Na Slupi" and is the lowest sitting part of the structure. The longest, second part of the building is elevated by half a level and rotated to follow the street "Apolinarska", along the slope. In between these two parts is a small rotation point, which holds the main staircase.

On the right is a redrawn section of the existing building, based off of the original plans and section from 1928, and updated plans from 1931.



# 3 Program

Considering its location, surroundings, character and interior layout the design calls for the building to accommodate student housing. Despite the upper floors being used as rooms even during the building's initial use as a spa, the ground and basement floors call for an additional program.

To preserve some of its history and meet the deficit of sports facilities in the nearby area, a pool has been carried on in the basement.

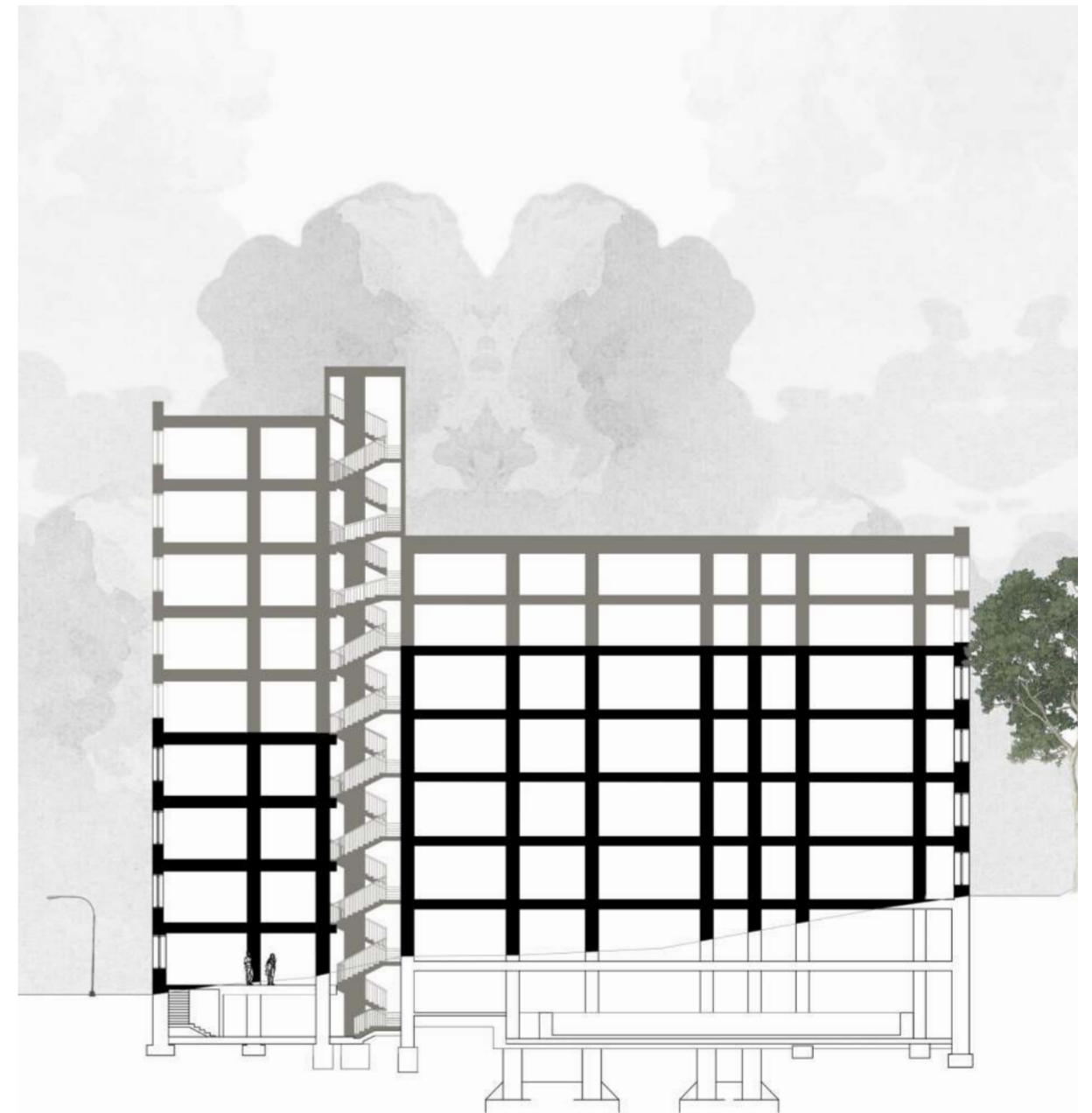
On the ground floor a cafe has been placed by the building's street entrance, repeatedly following the original use of this space as a public restaurant. In addition this space has been extended by one level below via a new staircase. The rest of the ground floor becomes a private area for the residents of the building and provides a gym, study room, laundry room, bicycle parking and rooms with basic cleaning supplies and tools.

The column dispersion within the building creates large hallways, which are therefore dedicated to recreational common spaces where the students can gather.

The central rotation point of the building, where the main staircase of the building is situated, has been replaced with a glass atrium.

On the right is a section, differentiating in color, the new and old structures as well as showing the distinctive slope on the site.

New Section



— New Layers  
— Existing Layers

1:500

## Ground Floor

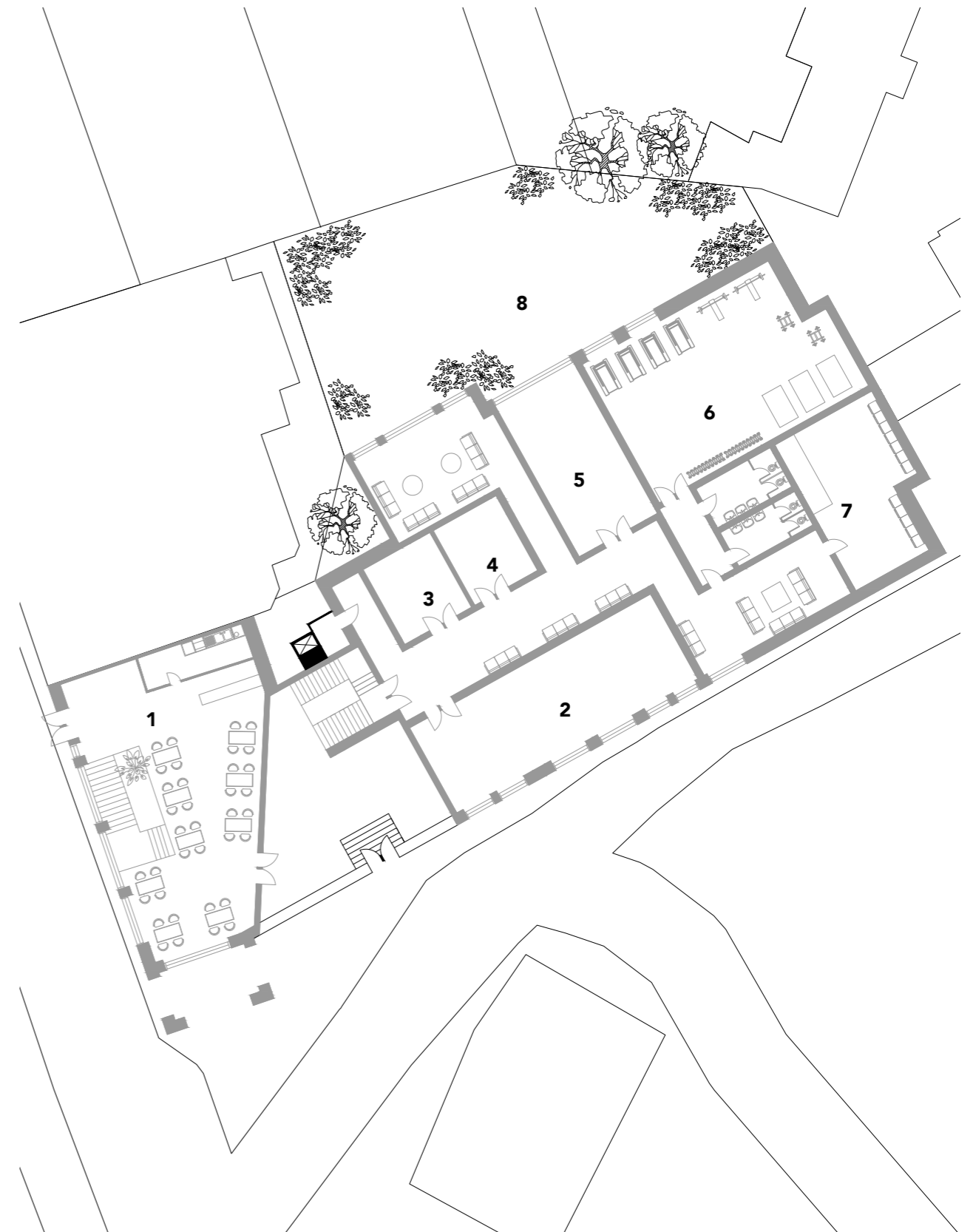
Making use of the direct entrance from the street, the ground floor accommodates a cafe that has been extended down to a level below it. The cafe is also accessible from the rest of the building via the central atrium at the rotation point of the building.

The design preserves the arched passageway covering a part of the sidewalk on the corner of the building.

The rest of this floor is accessible solely to the residents of the building, intentionally through the main entrance in the atrium. Area holds common spaces such as the study room, gym and a small lounge by the door to the garden in the courtyard. Furthermore, the areas of this level that are underground due to the slope of the site, are dedicated to more technical purposes, such as a laundry room, bicycle parking and tool and cleaning supply storage.

From the private part of the ground floor the residents have access to an elevator that has been placed outside the building in a small gap created by the neighboring residential houses.

The glass dome in the courtyard has been removed to create a larger garden space which flows into the park of the neighboring botanical garden.

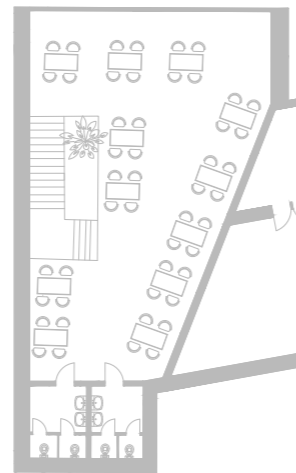
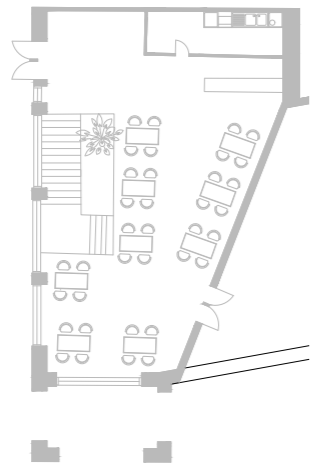


- |                      |                    |
|----------------------|--------------------|
| 1) Cafe              | 5) Bicycle Parking |
| 2) Study Room        | 6) Gym             |
| 3) Cleaning Supplies | 7) Laundry Room    |
| 4) Tools             | 8) Garden          |

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Cafe



Street View



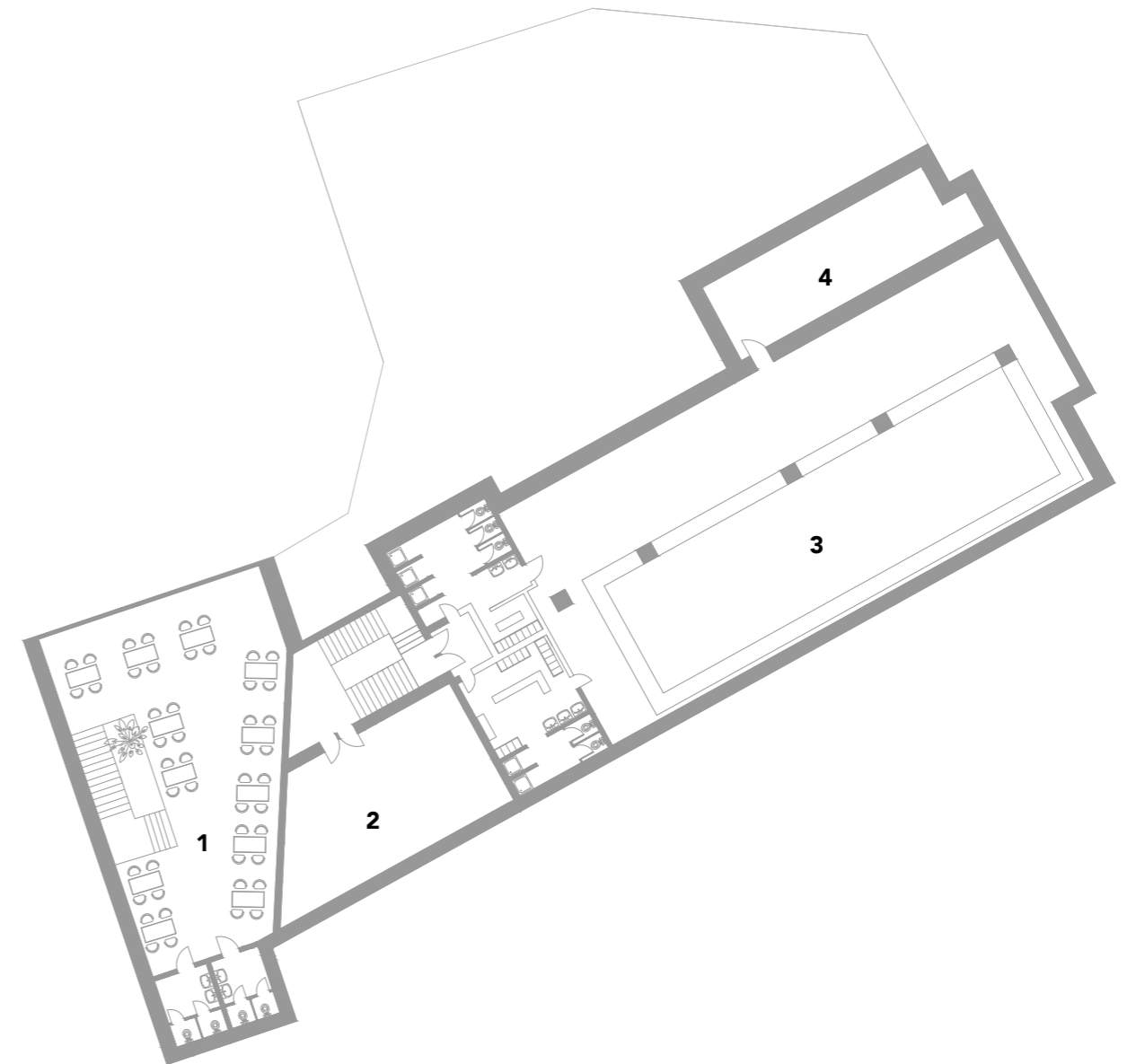
## Basement

The basement is going to be kept for the initial use of the building through the reconstruction of a pool. This part will be private, separated from the public second level of the cafe.

The cafe has its own staircase leading from its upper street level and bathrooms situated on the ground floor. The area by the stairs, accessible through the cafe is dedicated to a storage room for the cafe kitchen.

On the other side of the stairs is a door leading to the changing rooms of the swimming pool that then directly leads to the pool itself.

The furthest corner holds space for necessary gray water filters, water storage tanks, pumps and swimming pool technology.

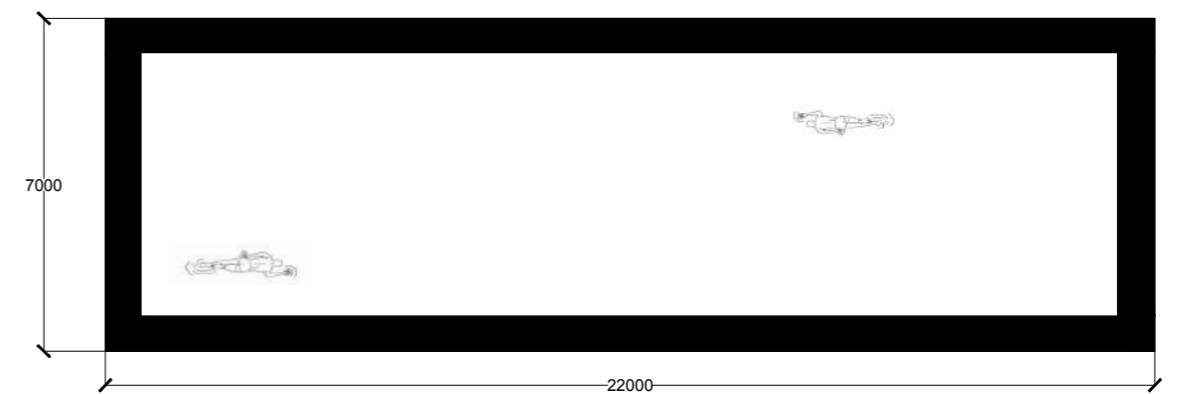


- 1) Cafe
- 2) Cafe Storage Room
- 3) Pool
- 4) Water Management Room

## Swimming Pool

The renovation of the swimming pool in the basement is a reaction not only to the history of the building but the overall number of sports facilities available in the city.

The pool creates a healthy relaxation zone for the students. Despite it not being a full 25m length pool due to the space available it creates long enough lanes.



### Typical Living Floor 1

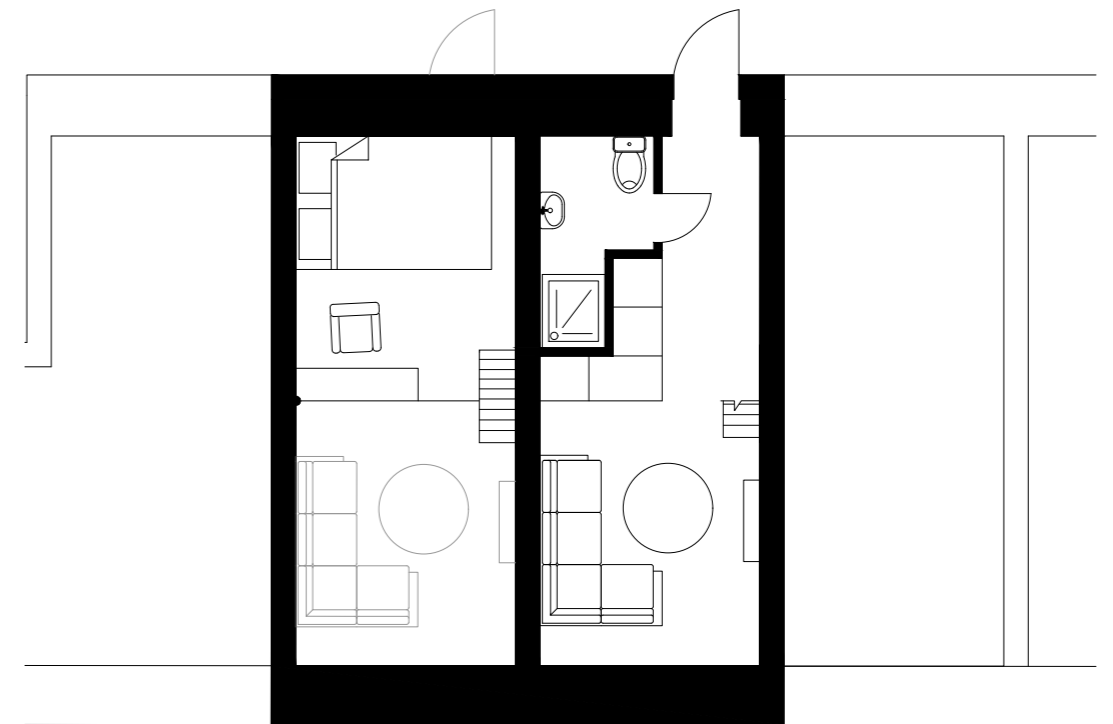
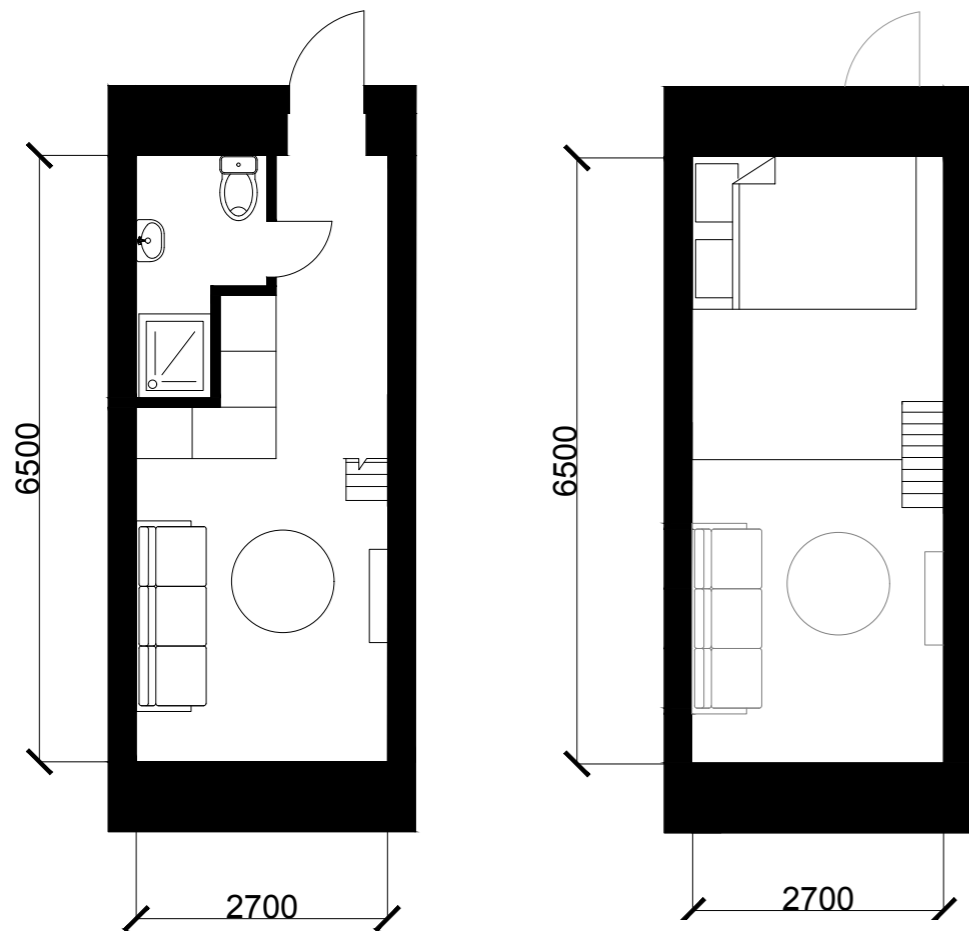
The living floors are separated into two different typologies based on the new and old structures. The first typology is the rooms that will be placed in the existing floors. These floors are 3.4m from floor to ceiling height. These floors are kept in their original state with the exception of the glass atrium in the center. The two minor new additions are the elevator outside the building and an extension, turning the existing balcony into a loggia for common spaces.





## Loft Rooms

The significant height of these rooms allows for the sleeping area to be placed in a loft. This not only creates space for more rooms on the floor but also allows for each room to have its own bathroom, placed underneath the loft and a kitchen and closet space along the walls.



## Typical Living Floor 2

The second typology of student dorm floors are those located in the new addition of the building. In the back part these floors are no longer 3.4m high but 2.6, which calls for a different bedroom typology, without the loft addition. This limits the space for a kitchen inside the rooms and therefore on these floors, the kitchen is placed in the loggia area.

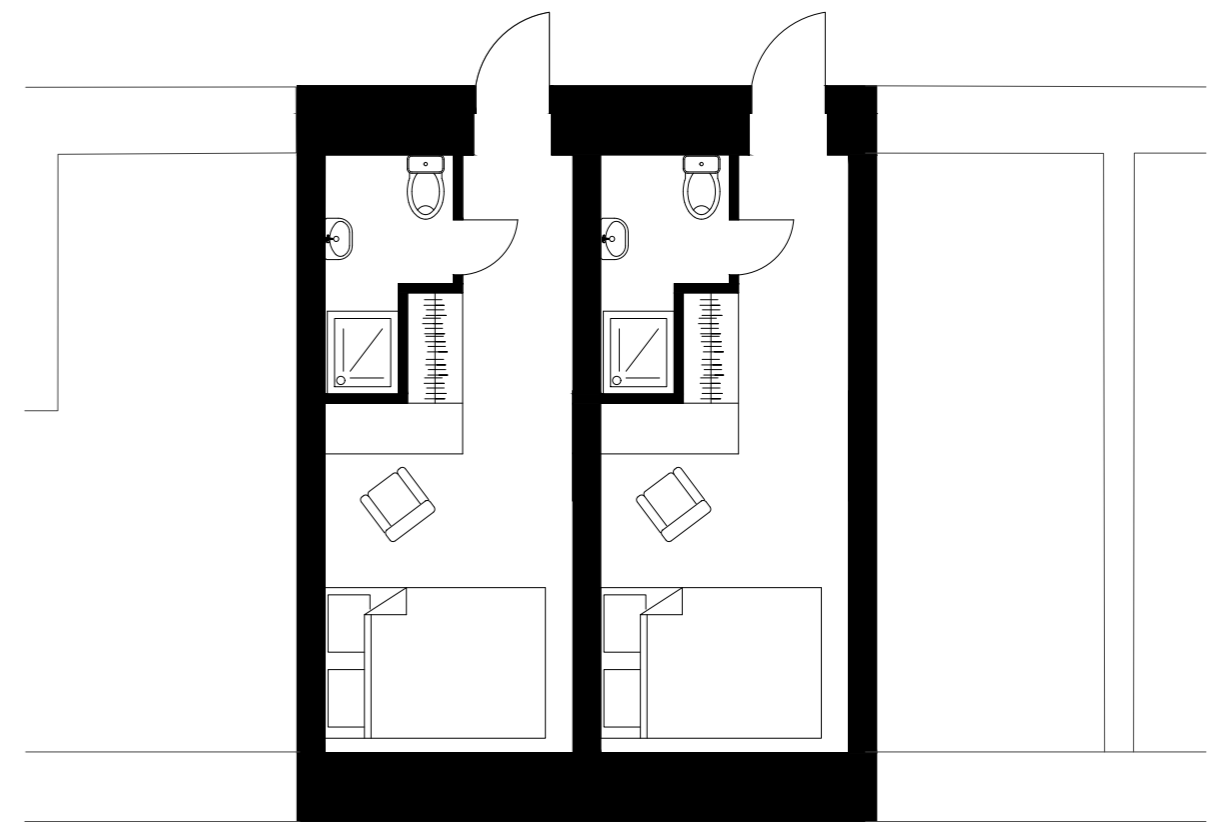
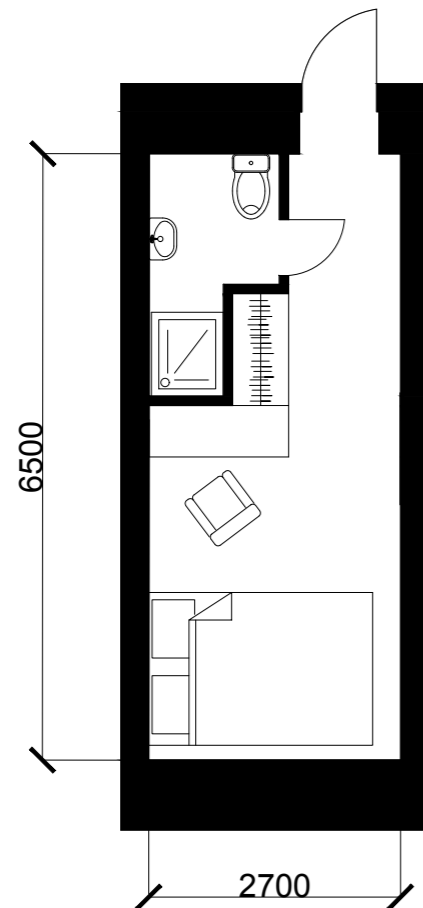


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## Small Rooms

The smaller rooms are the same width and length, the difference being in their height. This causes for the bed having to be placed on the bottom floor, limiting the space for a kitchen.



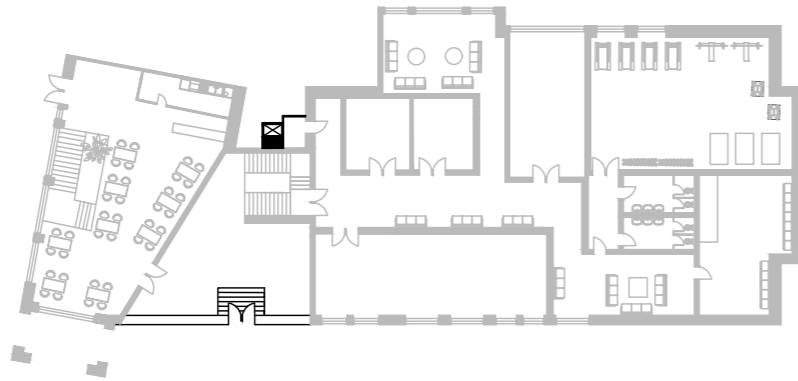
## Loggias

The loggias in the newly added floors have kitchens in the loggia spaces which combine functionality with an open-air atmosphere for this common area. The couches are placed in the wide hallways fostering interaction and socialization among the students.

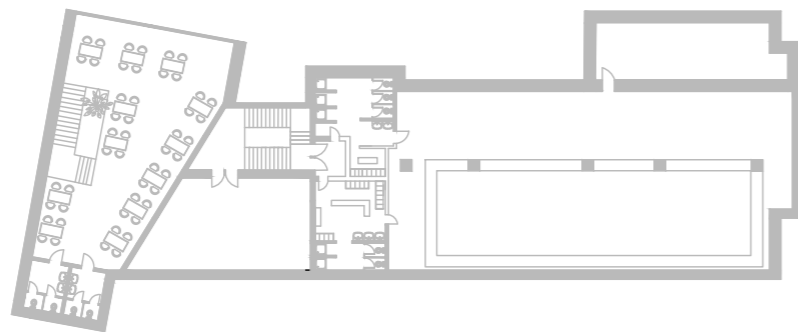


# 3.2 Plans

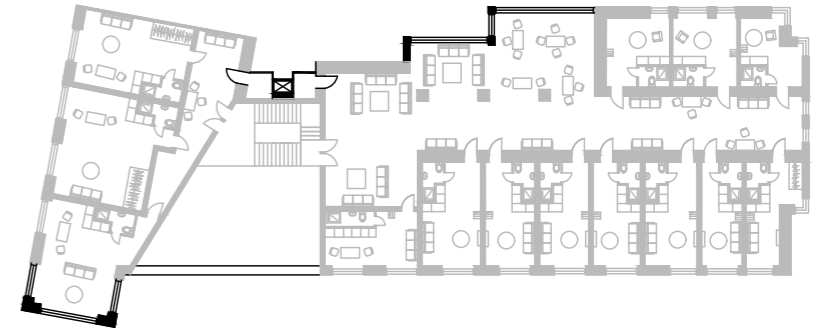
Ground Floor



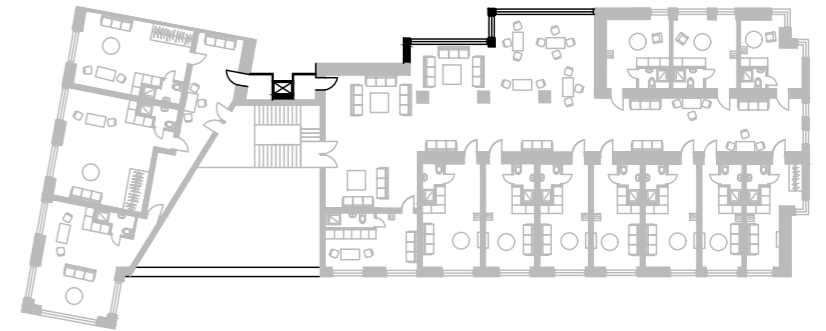
Sub-zero Floor



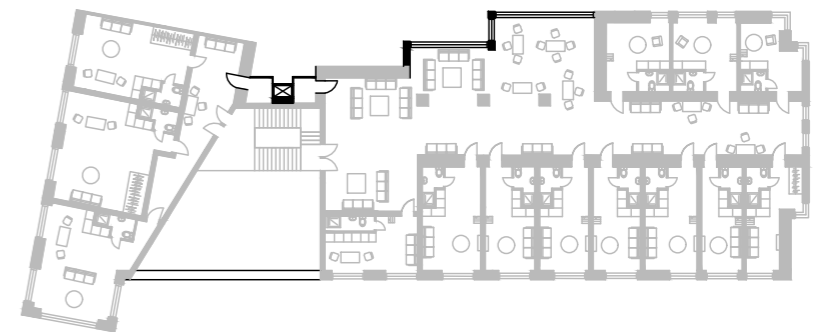
Third Floor



Second Floor



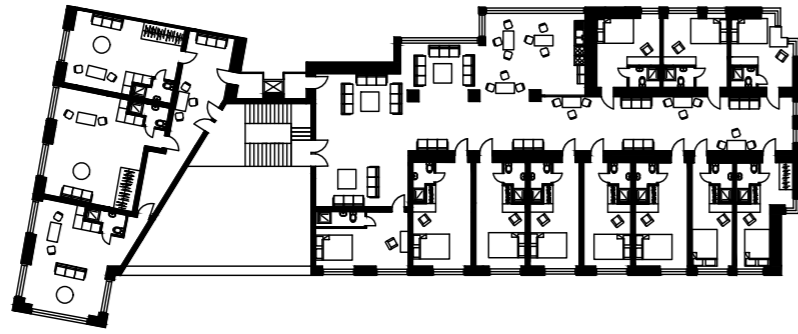
First Floor



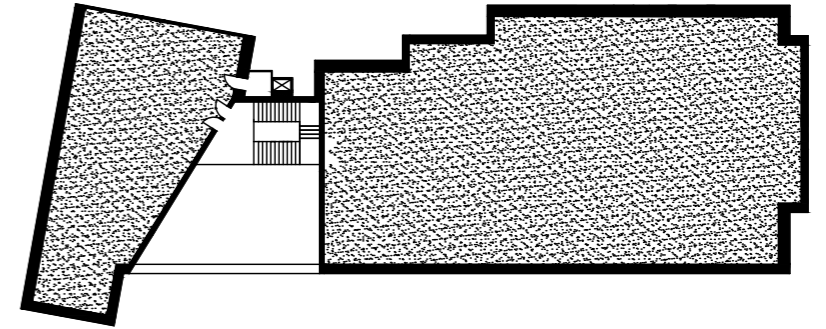
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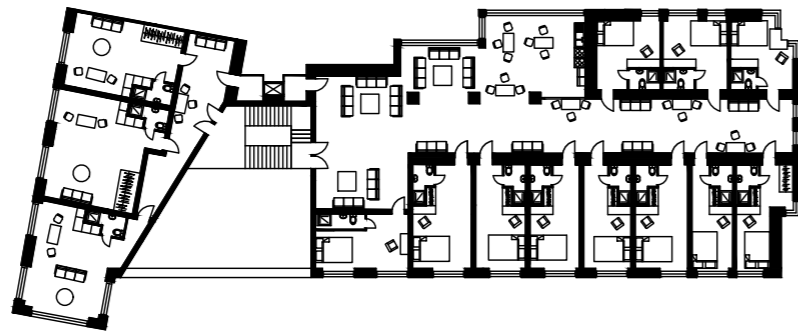
Sixth Floor



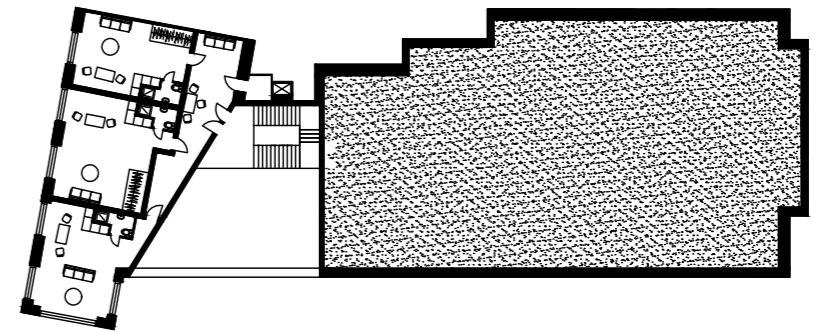
Roof



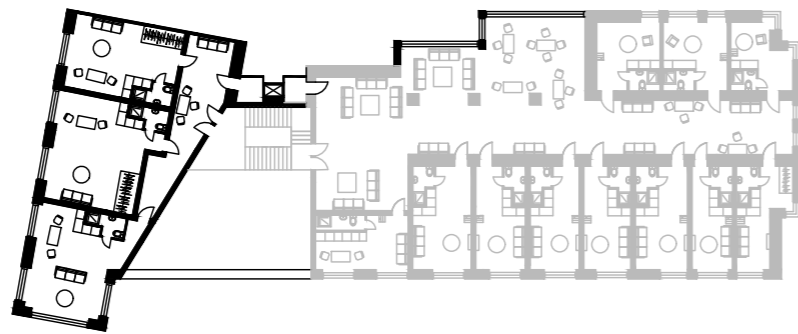
Fifth Floor



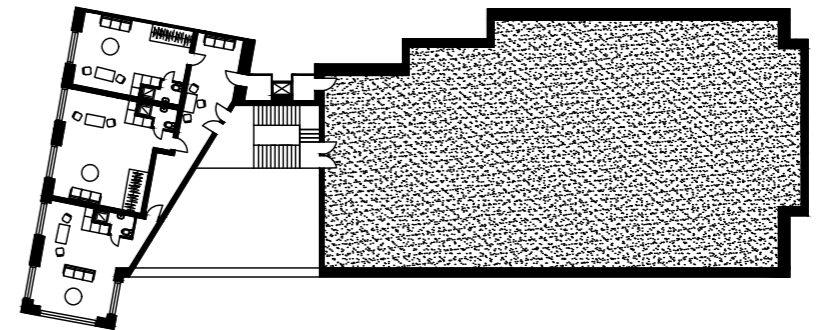
Eighth Floor



Fourth Floor



Seventh Floor



# 4 Overview

The new addition of the building is a new six floors on top of the front part of the building and two in the back. The new facade follows the geometry of the existing creating boundaries for the windows, but narrows then down creating a modern effect. The angled frames around the windows also add more privacy to the bedrooms, which becomes significantly important in the building part on the street.

The new addition facade is cladded with a dark gray matt finish aluminum cladding. The color is used to contrast the beige facade of the existing building. As a tie to the new addition the wall in the passageway is cladded in the same material. The existing part of the building is kept in its current state and fixed up in the same manner.

The roof changes from a typical pitched roof to a flat, walkable green roof, which serves as a terrace for the students. The roofs have railings offset from the edge of the building, crowning the tops of the towers.

Out of the three parts of the building the atrium is the highest, creating access to both of the roofs on either side. The previously lowest front part becomes the second highest accommodating the largest number of floors. The back part becomes the lowest. Overall, the heights of the building reflect and reverse the slope on the site.

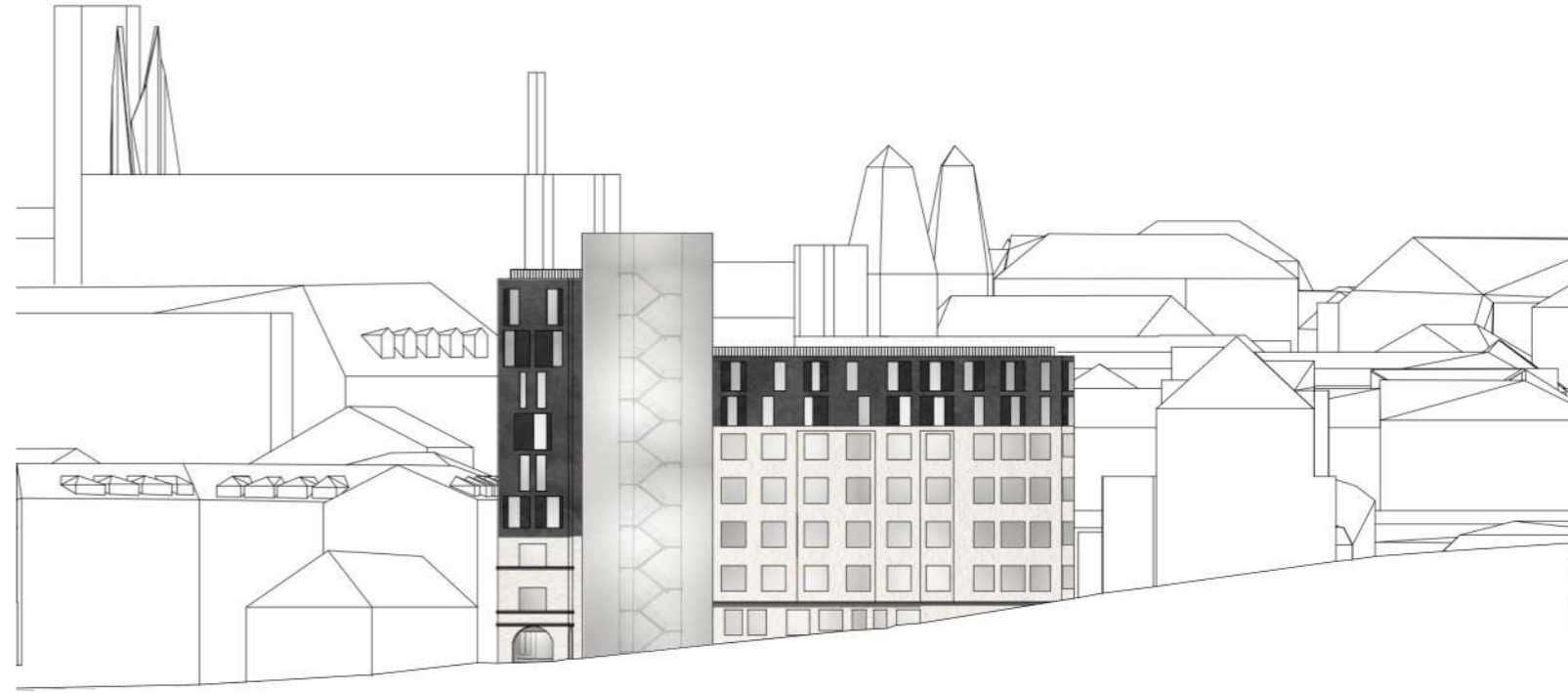


### Connection to Botanická zahrada

At the back of the building the garden in the courtyard is connected to the park of the botanical garden. This area extends the minimal garden that is on the site of the building, limited by the proximity of the surrounding buildings.

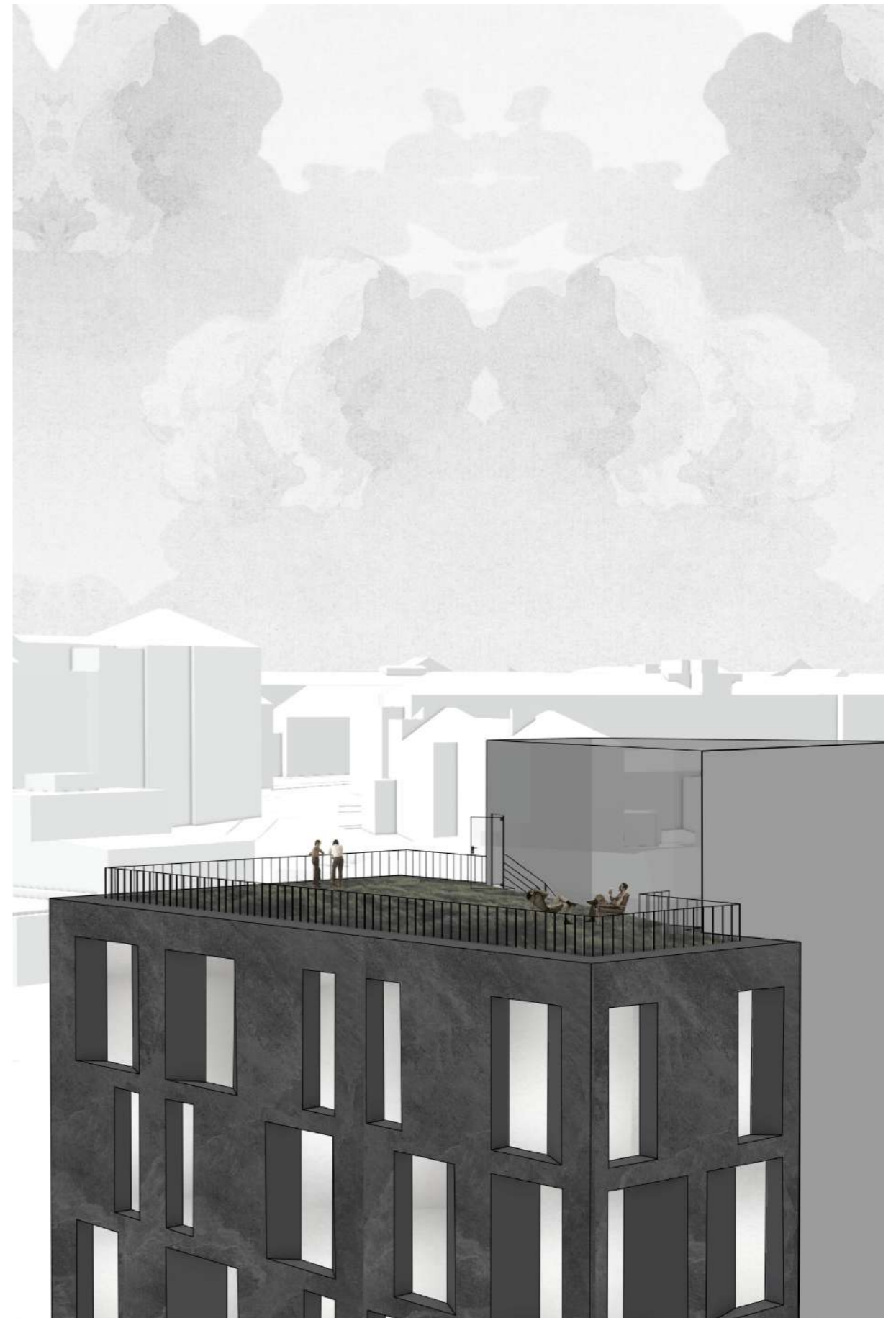






## Roof Garden

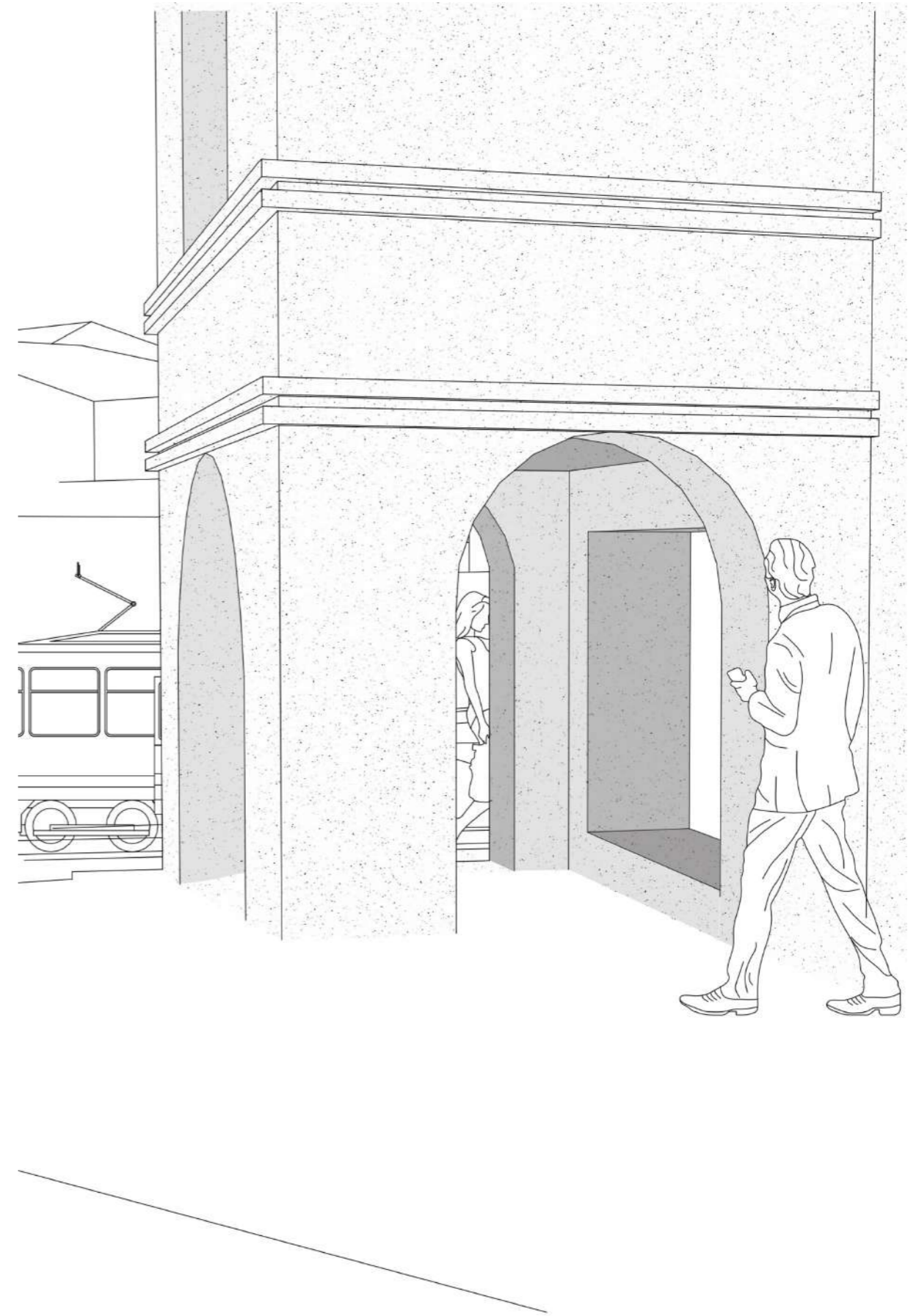
The green roofs create more garden space for the residents as well. Their placement allows for more daylight access to these areas making them a more attractive garden space than the courtyard blocked by the adjacent buildings.



Main Entrance



Passageway



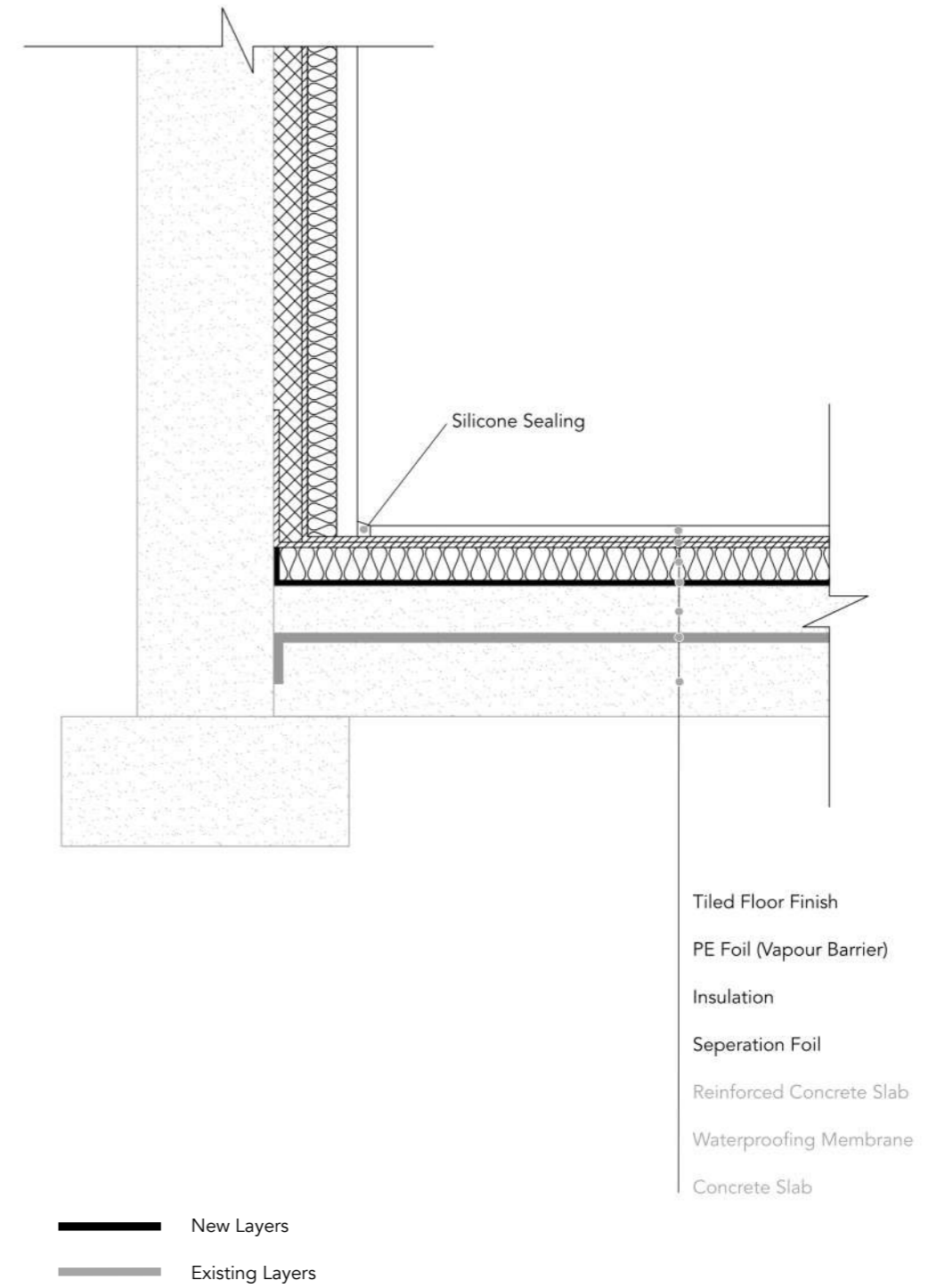
# 5

## Technical Details

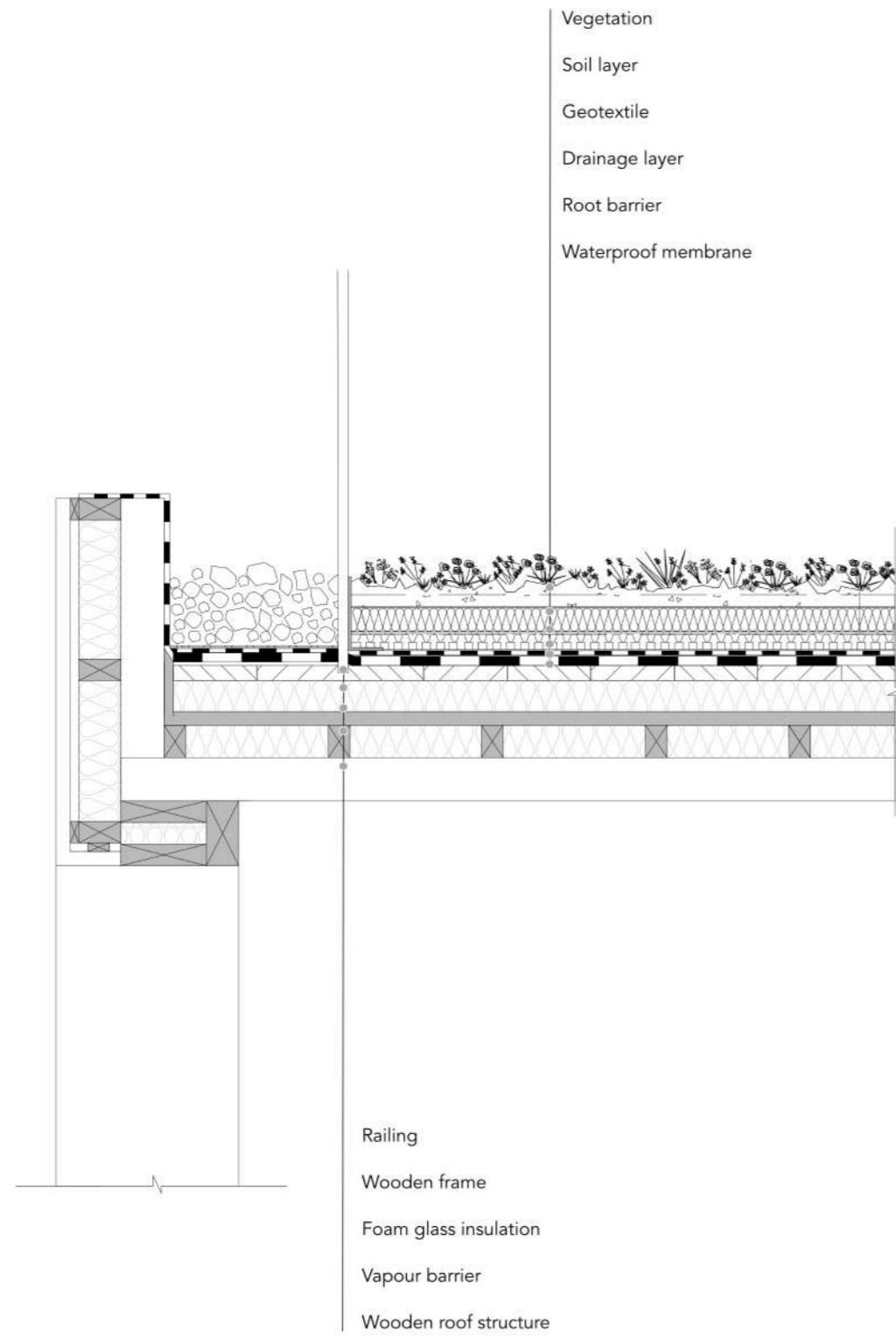
The construction details focused on in the building are the walkable green roof, tiling of the floor in the basement and the new timber structure addition, specifically the separating walls between the student rooms. The basement floor considers the assumed existing layers and adds to them to serve their purpose. The other two details show the new structure as a timber structure.

The building also incorporates a gray water recycling system as well as a heat recovery system. These systems are ideal in the typology of the building since most bathrooms and kitchens are placed on top of each other.

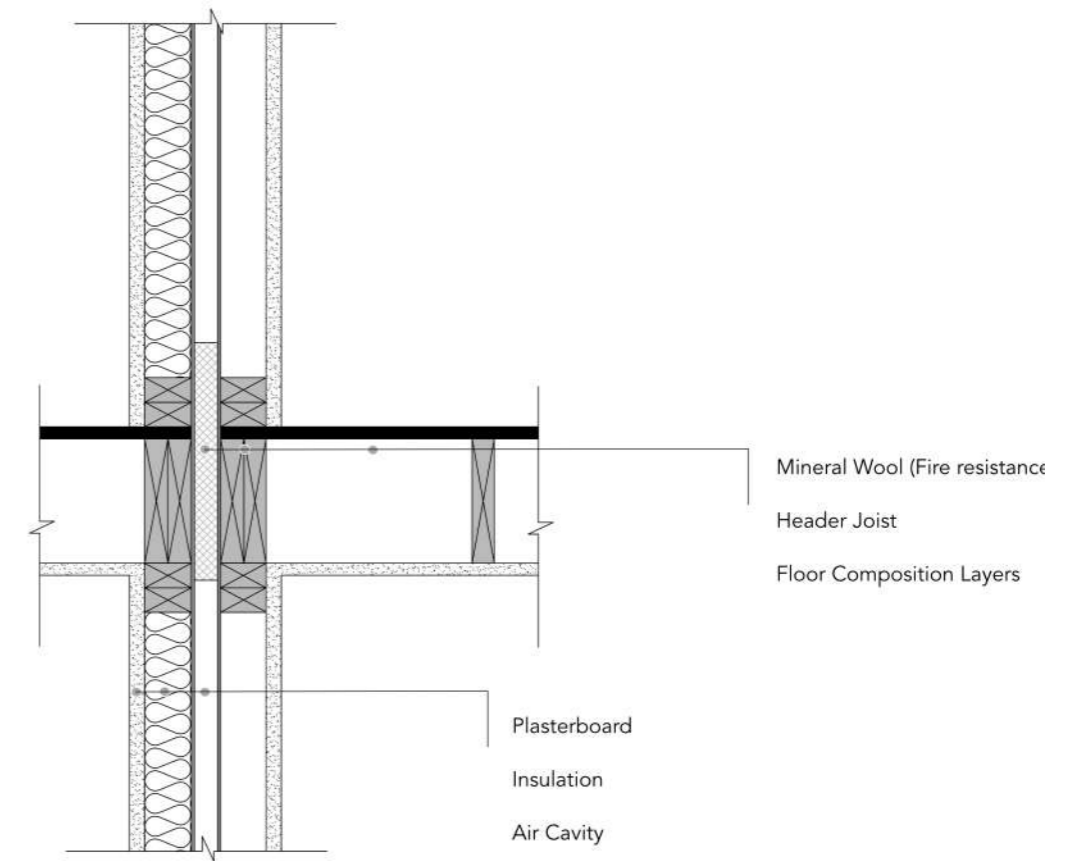
Basement Floor



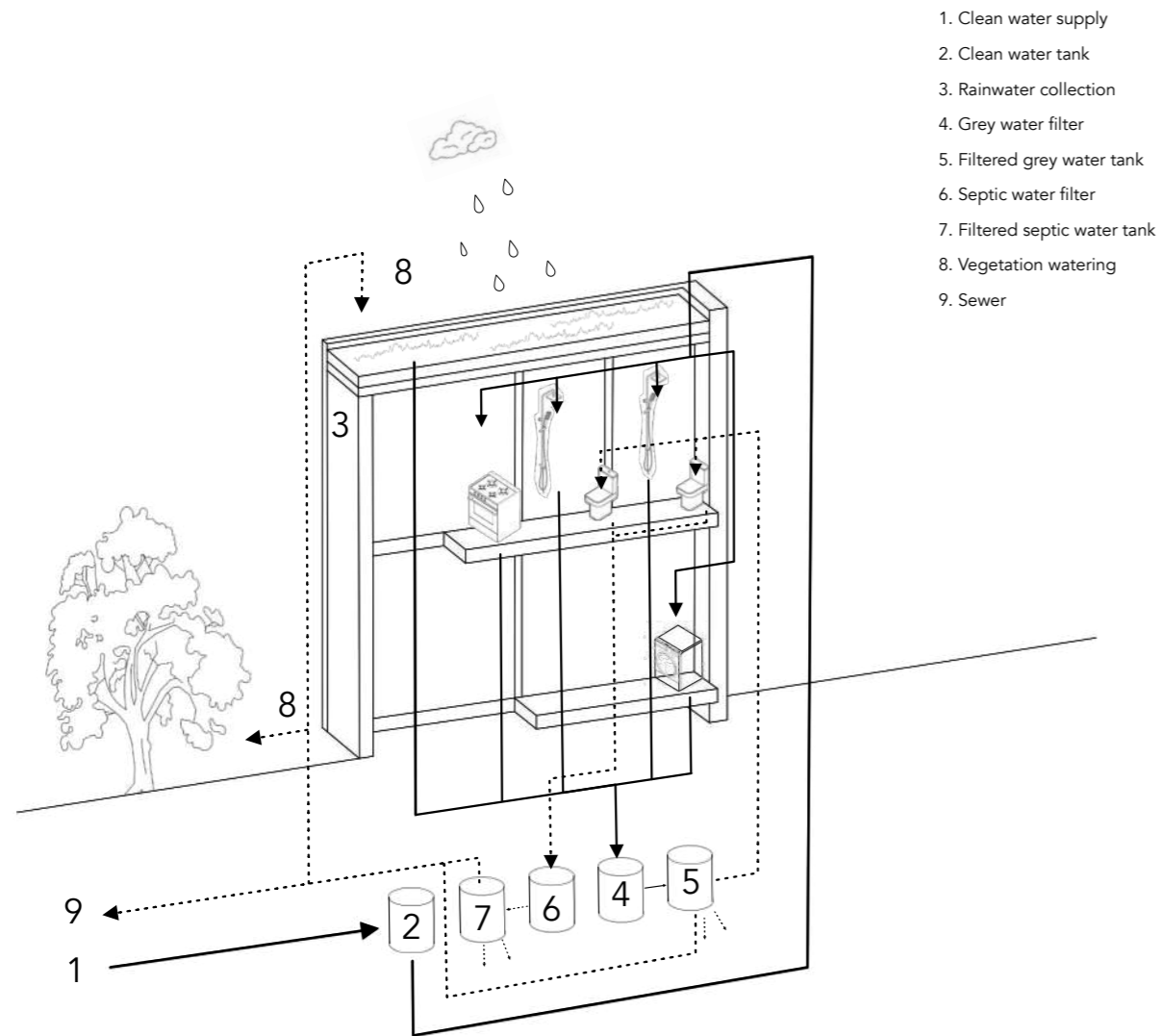
Green Roof on Timber Frame



Typical Separating Wall



# Gray Water Recycling System

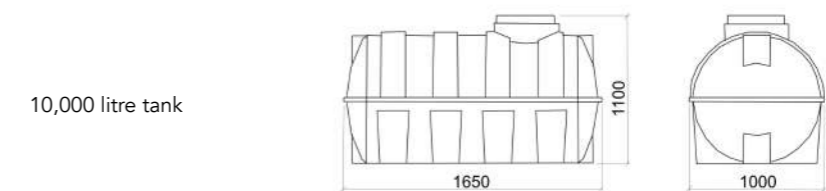
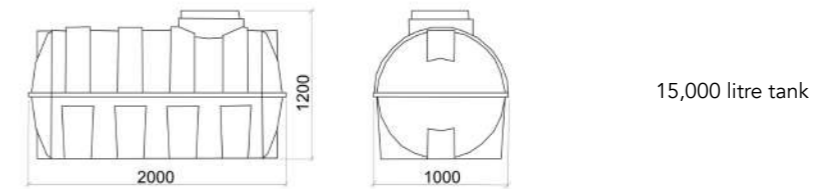


1. Clean water supply
2. Clean water tank
3. Rainwater collection
4. Grey water filter
5. Filtered grey water tank
6. Septic water filter
7. Filtered septic water tank
8. Vegetation watering
9. Sewer

Action	Water Produced (litres)	# of Repeats
Washing hands	3	420
Sink	15	252
Shower	45	84
Kitchen	40	84
Cafe kitchen	1000	1
Total grey water produced per day in litres:		12,180 l/day

Action	Water Used (litres)	# of Repeats	# of Units	Total l/day
Small flush	3	4.42	84	1008
Large flush	6	2	84	1113.84
Small flush (cafe)	3	100	4	1200
Washing machine	40	12	2	960
Washing machine (pool)	40	2	1	80
Dishwasher	15	1	90	1350

	Space to Water (m <sup>2</sup> )	Litres/ m <sup>2</sup>
Roof garden	1000	1.2
Garden	600	1
Total grey water reused per day in litres:		7,512 l/day



## Cover Report

The point of this report is to illustrate details of the building design. The main focus is on the renovation and new addition to an existing abandoned spa building from the 1920s. The locality and surroundings draw the spaces to become student housing, allowing the building to have efficient water and heat recuperation systems. The site is located on a steep slope causing the building to be partially sunken into the ground at one end. A key part of the project is to remove the existing roof and extend the building vertically at different heights to match the surrounding topography. The corner building is enclosed from 2 sides by neighboring buildings with a limited garden space in the courtyard. It is comfortably accessible from a tram stop 100m away from the main entrance.

## Contents

### 1. INTRODUCTION

#### 1.1 Purpose of the Building

#### 1.2 Project identification data

#### 1.3 History of the building

### 2. SITE

#### 2.1 Context

#### 2.2 Site Topography

#### 2.3 Existing buildings and green

#### 2.4 Accessibility

### 3. DESIGN CONCEPT

#### 3.1 Summary of Design Concept

#### 3.2 Old Structure

#### 3.3 New Structure

#### 3.4 Sustainability

### 4. CONCLUSION

## 1. Introduction

### 1.1 Purpose of the building

Aim of the project is to reuse an abandoned building in a key location in Prague. The site is surrounded by various gymnasiums and universities allowing for this to be prime location for student accommodation.

### 1.2 Project Identification Data

- 1.2.1 Project Name: Lazne na Slupi
- 1.2.2 Location: Apolinarska 343, Albertov, Prague 2, Czech Republic
- 1.2.3 Type of Building: Student Accommodation
- 1.2.4 Architect: Anna Fikrlova

### 1.3 History of the Building

The building was built in 1928 by architect Jan Jarolim, originally as a spa with baths and pools situated on the lower floors and relaxation rooms in the levels above. With minor reconstructions in 1931 the spa continued with its initial functioning purpose until the early 1970s. After the discontinuation of the spa in the 70s the new owners aimed to rent the rooms as individual apartments but the building was never fully inhabited with the last tenant eventually moving out in 2003 leaving the building empty since then.

## 2. Site

### 2.1 Context:

Location: Albertov, Prague 2, Czech Republic  
Current built area: 1200m<sup>2</sup> floor plan

### 2.2 Site Topography

The building is placed on a steep hill causing a 4m height difference between the pavement from one side of the building to the other side of the other. This significant characteristic causes the first floor of the building to sink underground as the hill continues up. Beyond the building the hill continues and at the other end it is aligned by the flat area of the surroundings leading to the river.

### 2.3 Existing Site Buildings and Green

The building is blocked off on either side by neighboring buildings and possesses a small courtyard between the buildings that was covered by a new bath structure during the reconovations in 1931. Thanks to the near proximity of the Botanical Garden, the greenery belonging to the site flows into it, allowing for a large park, which in this dense area of Prague is a rare characteristic.

### 2.4 Accessibility

The main entrance to the building is 10m from a tram stop that continues towards a transportation hub at Karlovo namesti. It is a walkable distance from many surrounding universities and the river and a 5-minute tram ride to the old center of Prague.

## 3. Design Concept

### 3.1 Summary of Design Concept

The project focuses on the repurposing of an old building, keeping as much of the existing structure as possible. The design separates the plan of the existing building into three sections based on their orientation. The front of the building, connected to the main street "Na Slupi", is to be kept up to its roof, which is going to be removed and replaced by a new addition of six floors and a green roof. The back of the building, oriented 45 degrees anticlockwise from the front part, is also partially sunken into the steep topography of the side street "Apolinarska". This part is similarly to be kept in its original state up towards its roof, which is to be replaced by two new floors with a walkable green roof. Lastly, the space between these two typologies is going to be completely replaced by a glass atrium framing the main circulation staircase in the whole of the building as well as the main entrance. The two sections separated by the atrium are originally also separated by a difference in floor level heights, causing each level of the back section to be at the height of the first staircase landing leading from the corresponding level of the front section. This is caused by the steep slope the building sits on is to be followed even by the new additions on both of the parts of the building.



## 3.2 Existing Structure

### 3.2.1 Foundations:

The building has existing foundations from when it was built in the late 1920s. What is legible from the historical technical drawings, is that there are 750mm by 750mm columns rooting from the foundations through the building spanning, on average 5m from each other. Another structural element is the staircase placed between the two differently oriented typologies of the building. All of these elements are kept in the building and worked around with the new interior design elements. The new load bearing timber columns follow the existing ones and are extended to the roofs.

### 3.2.2 Basement:

The basement is going to be kept for the initial use of the building which is the spa. A pool is to be constructed in the back section of the building and the front section will be dedicated to a second floor area of a cafe created above it on street level. The technical rooms will be placed in the furthest right corner of the building. These will include two filters and two storage tanks for the gray water in the building and the necessary technology for the running of the swimming pool.

### 3.2.3 Ground Floor:

The Ground floor is to be kept and stripped of the additional extension that was added in 1931 in order to enlarge the limited garden space in the courtyard belonging directly to the site. The area in the front section of the building accessible from the main street is to become a cafe that is extended to the basement area under it. This becomes the only fully public part of the building with its own staircase to the lower level, keeping the rest more private for its residents. The main entrance for the residents of the dormitories is through the atrium on "Apolinarska" street. The back section behind the atrium is to be a private section for the inhabitants of the building. This part will include technical rooms such as tool or cleaning supply storage, a laundry room, gym or bicycle parking and a study room. Considering that this part of the building is gradually submerged underground when one follows it further from the main street, the rooms that don't need daylight are placed at the back and study rooms and lobby more towards the front, allowing at least the minimal daylight to penetrate through.

### 3.2.4 Interior:

As a spa, the building has rooms for patients, which are going to be maintained where possible. There are a few exceptions of new, wooden structure separation walls which allow for more student rooms. This is mainly because the designed room typology calls for narrower rooms, than the ones in the existing structure.

## 3.3 New Structure

### 3.3.1 Glass Atrium:

A glass atrium is designed as a frame around the existing staircase as a separation between the two typologies of the building. This atrium will also provide the main entrance for the residents of the building at the intersection of the main and side street. The atrium is the tallest rising tower of the three typologies of the building allowing for it to provide an entrance to both the green roof at the lower back building and taller front building.

### 3.3.2 New Floors:

New floors have been added above both sections of the building. The extending new structures are timber framed. Two on the back of the building, meeting the original height of the removed roof, but creating a more efficient space generated by the flat roof shape rather than the existing pitched roofs. These two new floors are 2.6m high and dedicated to student dorms as well as the existing floors below it with the exception of the ground floor and basement. The front of the building is extended by six floors bringing a new height to the original structure but meeting the surrounding building heights and slopes. These six floors will follow the 3.4m heights of the existing building. Similarly to the back section of the building they are to be dedicated to student dorms with the exception of the two most bottom floors. The building is further extended to meet the floor plan of the slightly larger ground floor. The space of this extension is to be dedicated to a common space that blends into the wide hallways between the rooms, creating common spaces at each level.

### 3.3.3 Elevator:

Due to the age of the building there is no elevator in the building. Therefore, the new elevator is placed in a small awkward gap between the front and back buildings, behind the atrium. Since the height of the floors in the front and back buildings differs, the elevator is designed with a door on both sides, stopping at each sub-level to meet both sides of the buildings.

### 3.3.4 Green Roofs:

The two sections are covered by an intensive green roof at the top that is accessible from the atrium. These serve as viewpoints for the surrounding panoramas of Prague and extend the limited garden space that the residents have in the courtyard. Furthermore, it helps with the cooling down of the building and the rainwater collection contributes to the water recycling system designed in the building.

## 3.4 Sustainability Concept

### 3.4.1 Gray water system:

The typology of the building being student housing allows for a gray water recycling system to be designed through the rooms. All the bathrooms and kitchens in the building from the second floor upwards are placed directly above each other and, therefore, allow for easy collection of gray water and filtering it back into the building. Four filters and two water tanks, in the basement, help run the water from the clean supply of the city through the sinks and showers and back for toilets before directing it out to the city sewage system. The gray water recycling system has been calculated. The results show that the produced gray water amounts to around 12,000 liters a day and the amount that can be filtered and reused for the toilets, washing machines and watering of the greenery is 7,500 liters a day. Therefore, this requires a 14,000 liter water tank for the filtered gray water to be stored in the basement. Furthermore, there is also a need for a smaller water tank for the filtered black water. Both these tanks are accompanied by separate filters for cleaning of the water. The water from the gray tank is then designed to run the necessary water throughout the building but also lead the surplus out through the sewers to avoid overflowing of the tanks. The black water from the toilets is filtered to water the garden and roof greenery and the rest is directed out into the city sewer system.

### 3.4.2 Heat recovery system:

Due to the dense layout of the rooms in the building and heat generating rooms like the laundry room or the pool in the basement, the building also creates a great opportunity for a heat recovery system to be implied. The heat exchange unit is to be placed in the roof structure on the highest floor since naturally hot air rises up and cold air flows down. The heat exchange unit will suck the breathed out, hot air from inside the building, especially from hot rooms such as kitchens and bathrooms, and pass it against fresh air from the outside, warming it up. This will allow the air from the outside to be partially heated from the heat already produced within the building. This decreases the energy being used to heat the building yet still provides fresh air.

### 3.4.3 Solar panels:

Solar panels are to be placed along the sides of the railing of the green roofs and on top of the atrium, covering around 300m<sup>2</sup> of the building with energy generating solar panels. This further provides the building with more energy savings, especially during sunny days.

## 4. Conclusion

The project focuses on a building that has been left abandoned since the early 2000s and is currently in a deteriorating state. The design proposes a new purpose for the building, changing it from a spa to student housing, through changes on the interiors and additional levels above the existing structure accompanied by an atrium around the central staircase. The proposal is the result of research of the surrounding area that has concluded that there is 1, 200 bed building for an area surrounded by large university buildings and multiple gymnasiums. The design calls attention to the growing problem of abandoned buildings in Prague and tries to create a sustainable example of how the existing built environment can be repurposed into something new.

