C.U.B.E.

Co-Living in Unity, Balance and Equality

Team 20: Bulgaria

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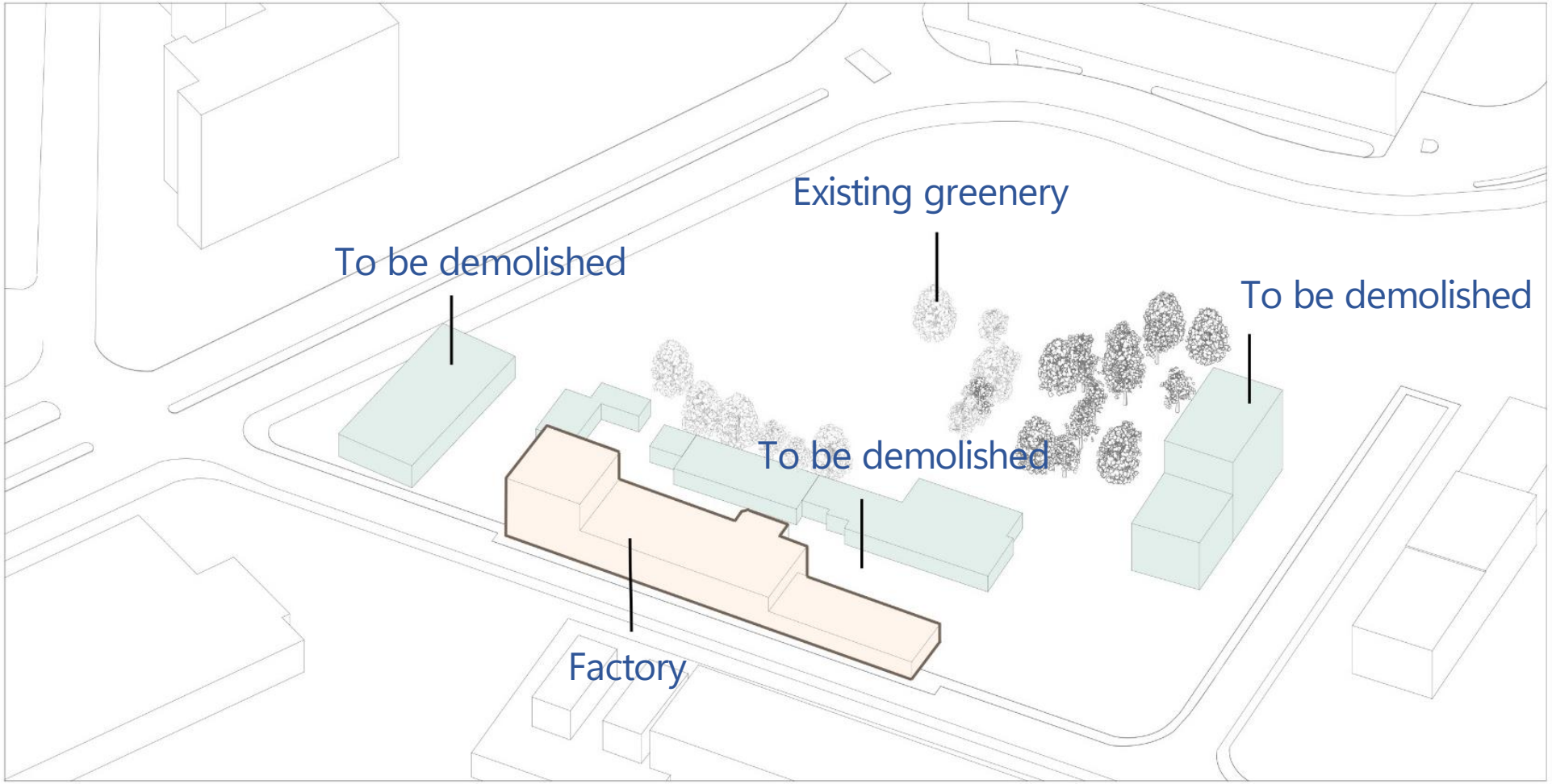
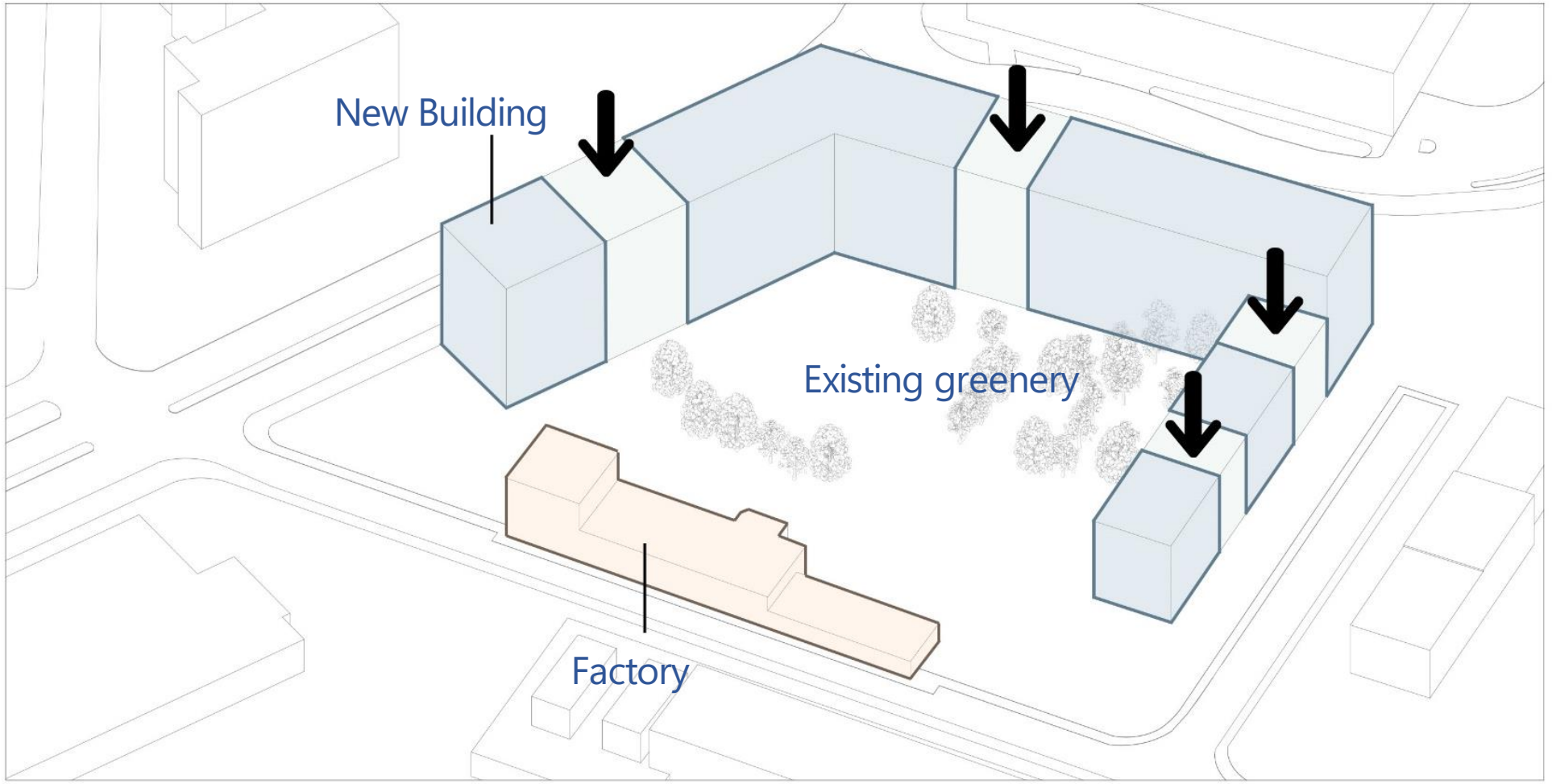
New Bulgarian University

Teacher: Dr. Arch. Gergana Stefanova

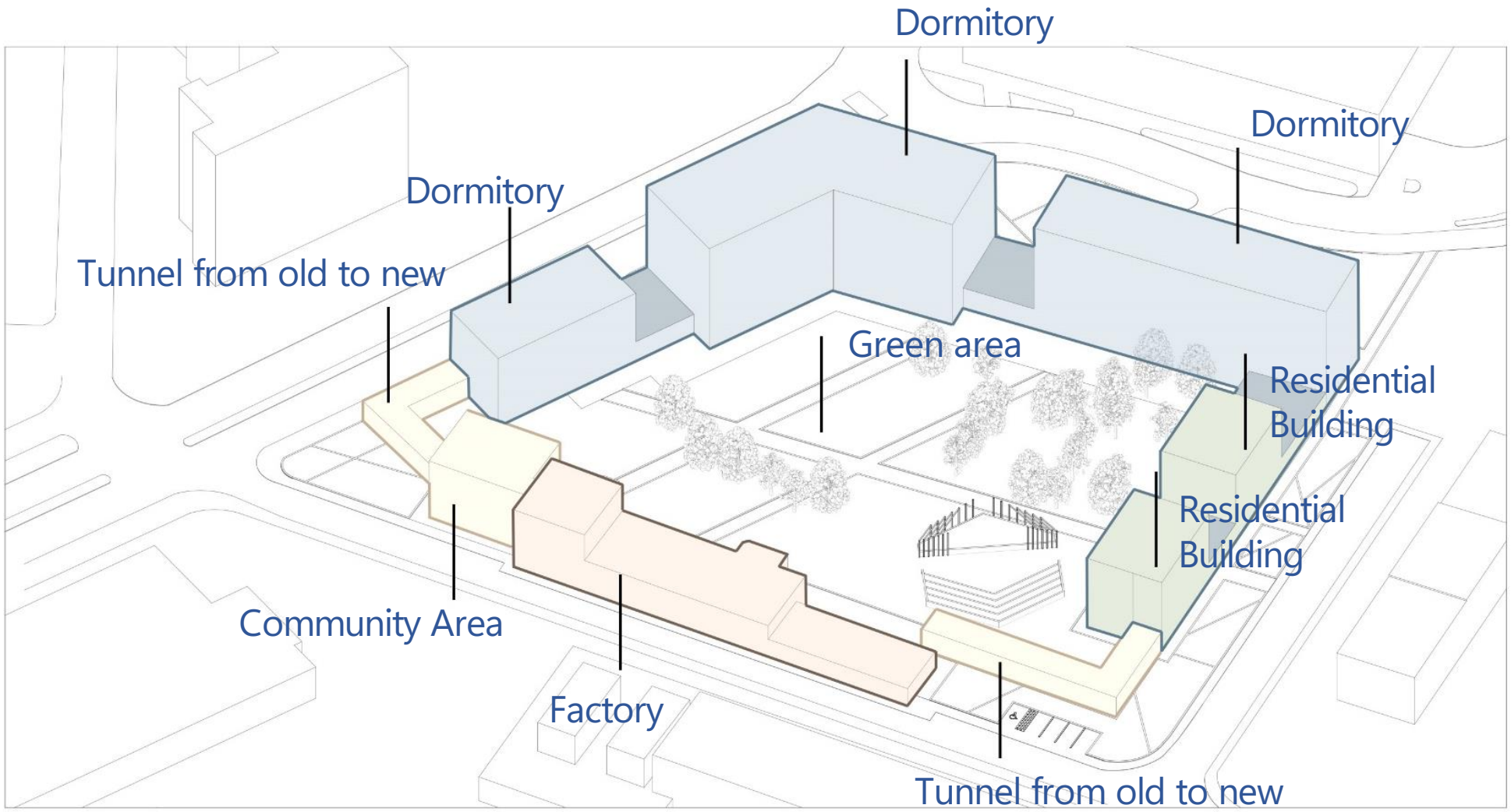
Analysis


Existing greenery
To be demolished
To be demolished
To be demolished
Factory

Analysis



Analysis


Dormitory
Dormitory
Dormitory
Tunnel from old to new
Green area
Residential Building
Residential Building
Community Area
Factory
Tunnel from old to new

Concept

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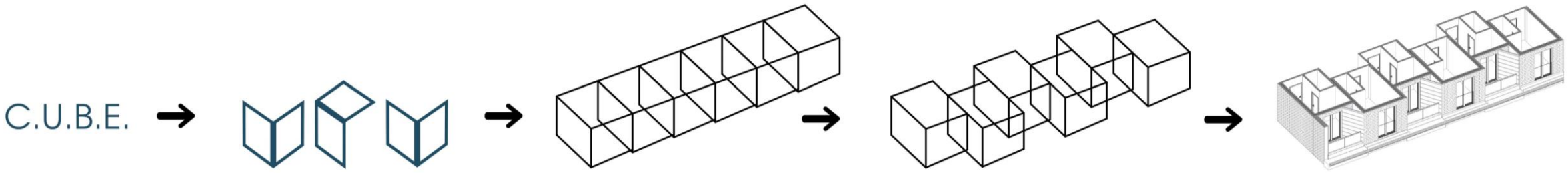


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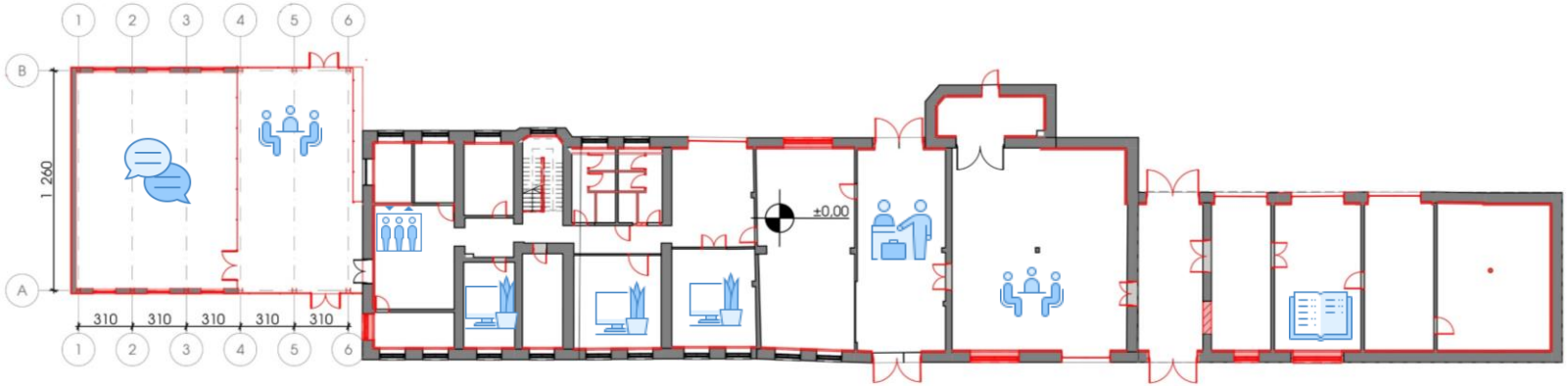
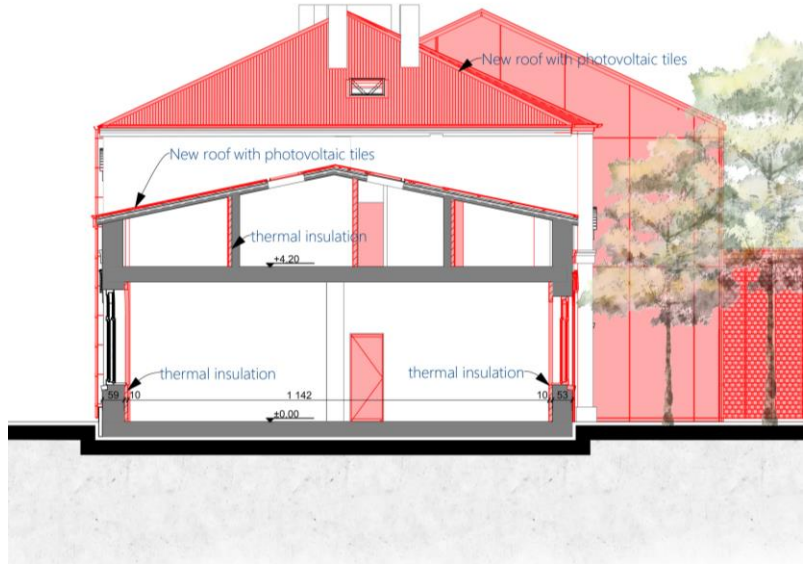
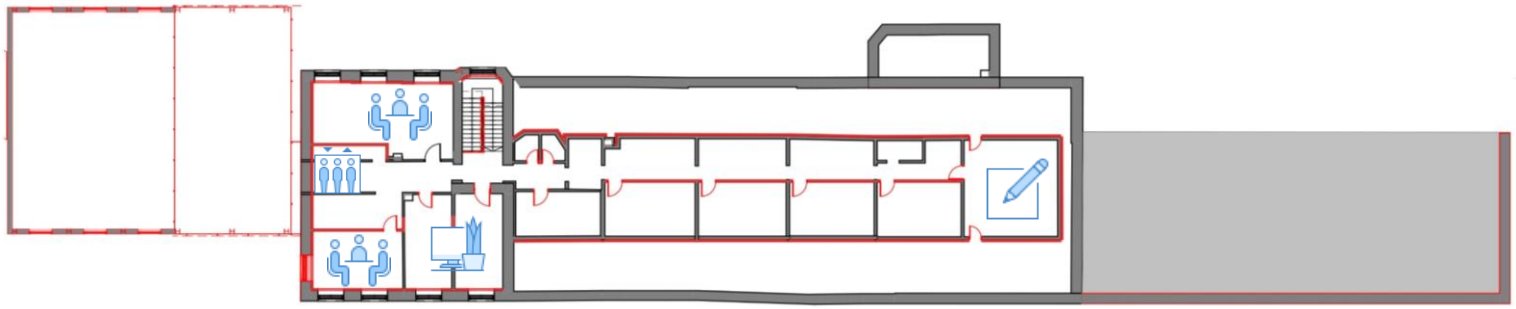
The Factory



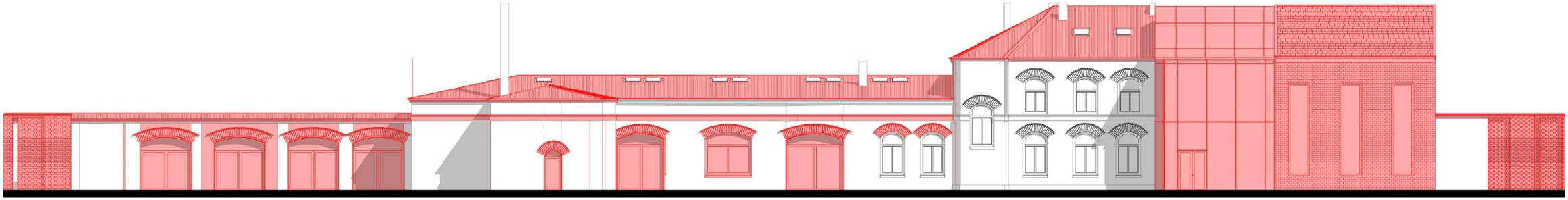
1st Level





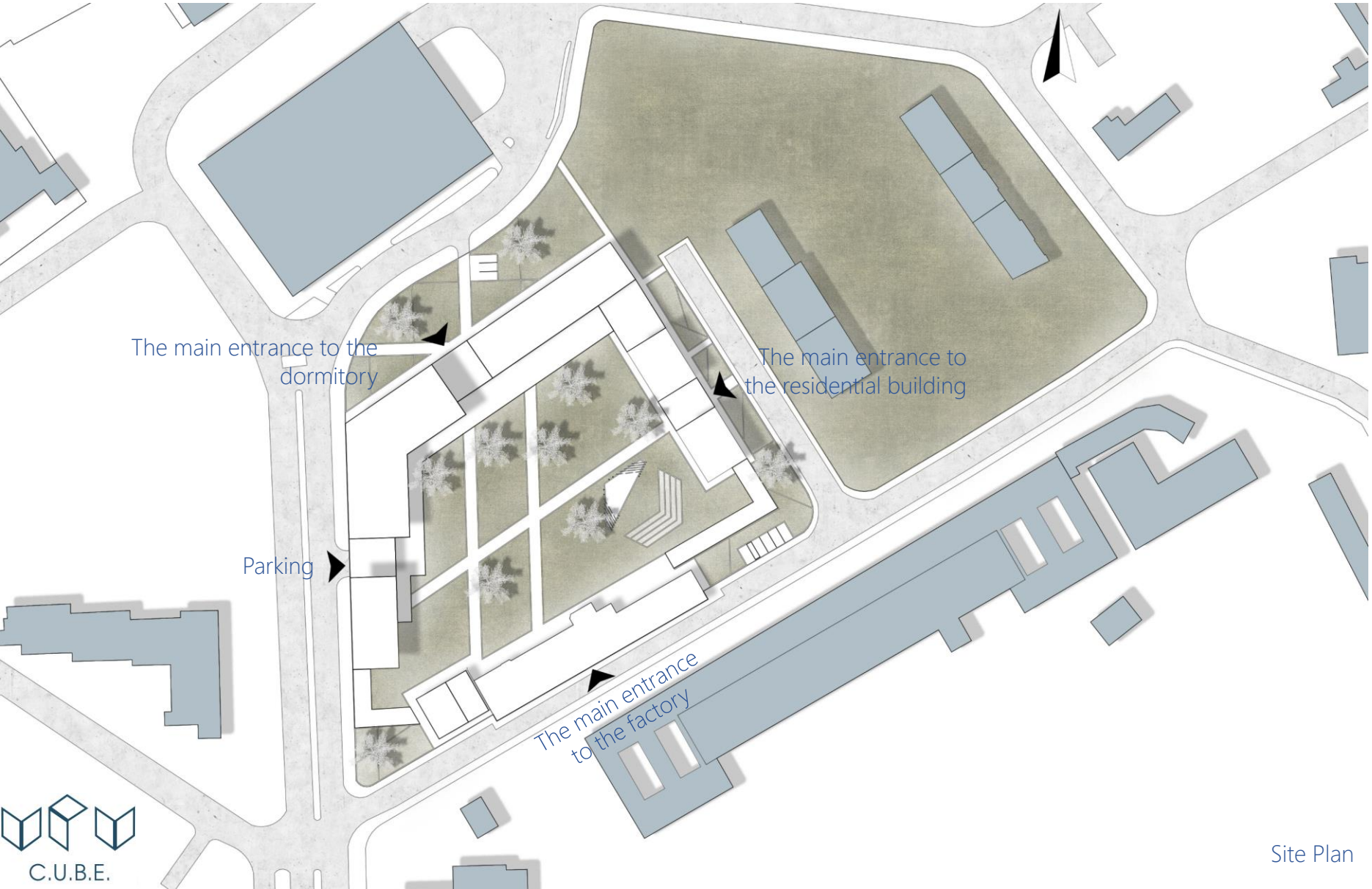
2nd Level

The project intervention is shown in red. It is envisaged that the factory will be thermally insulated on the inside with ISOVER PLU NT 10 cm thermal insulation.

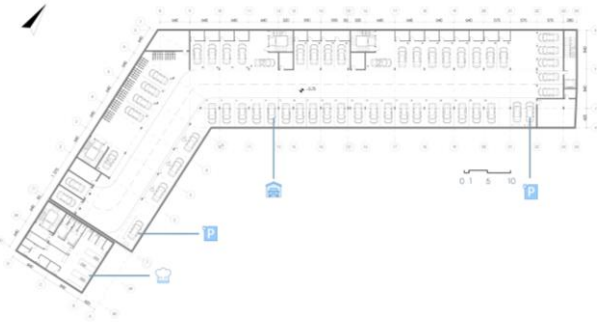


Elevations of the factory
Reconstruction of the silhouette

The Dormitory



Site Plan



Underground Parking
Level -3,70

Two-story underground parking with charging stations for electric cars.

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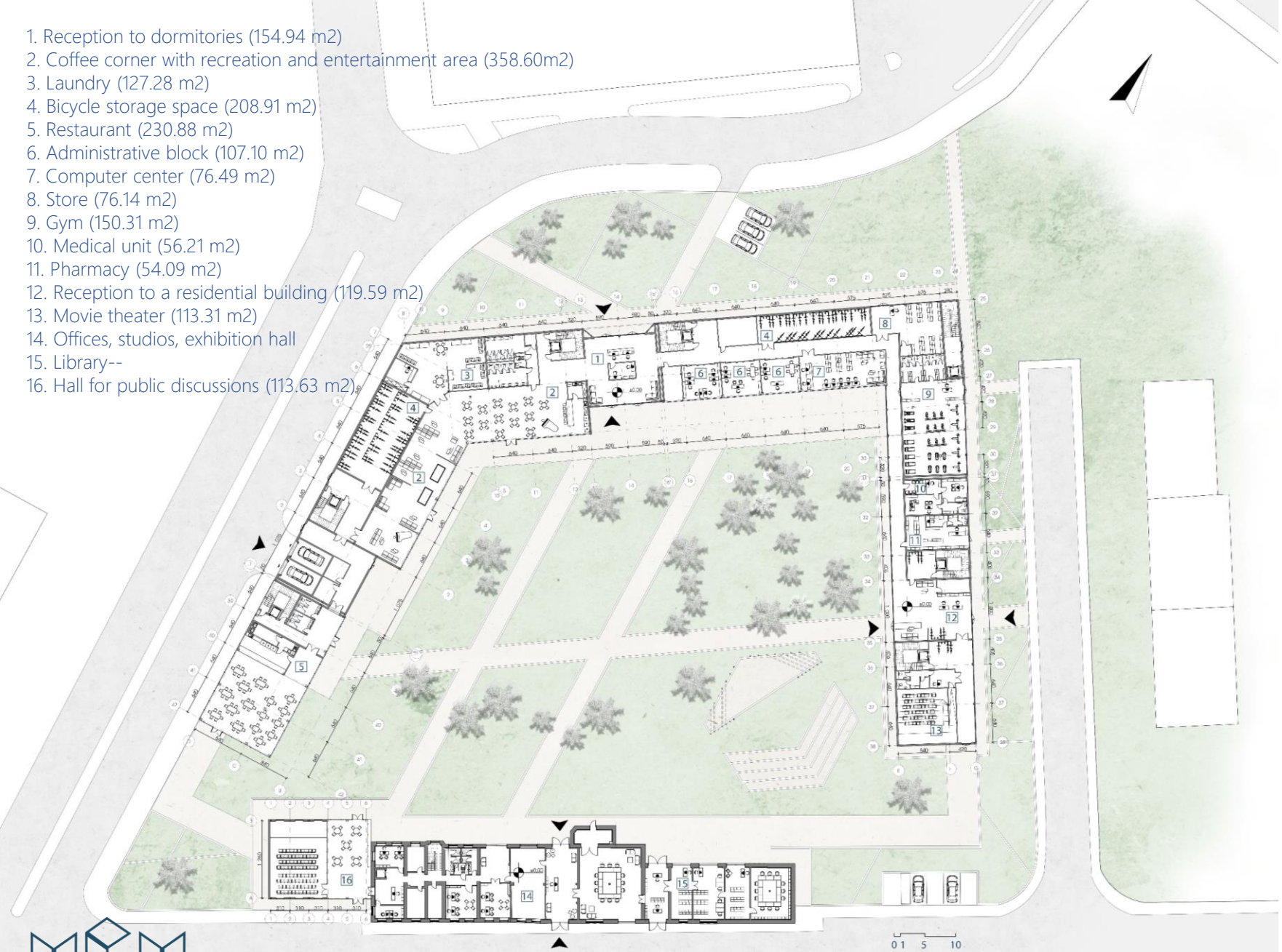
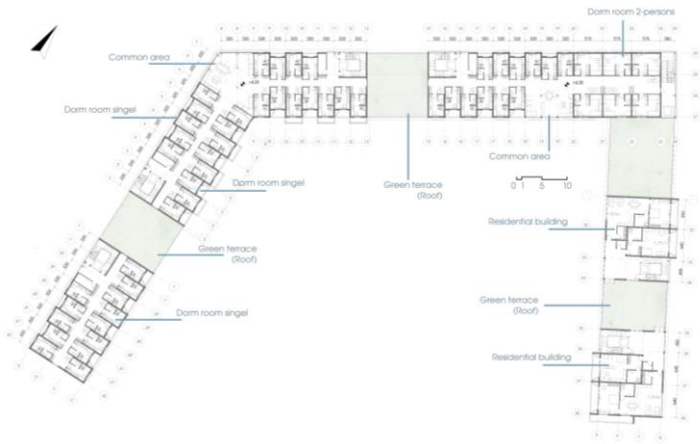
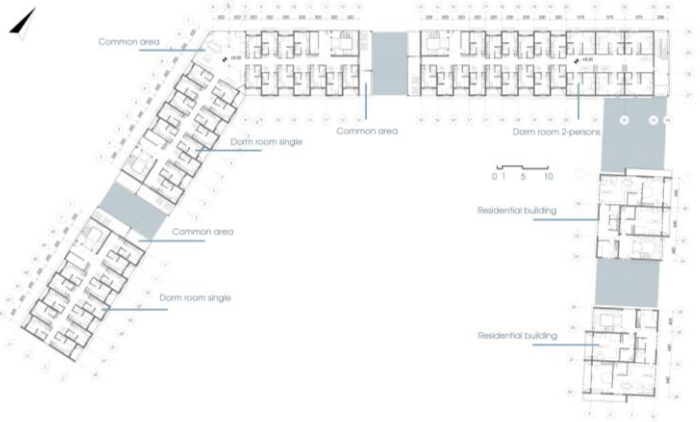
1. Reception to dormitories (154.94 m2)
2. Coffee corner with recreation and entertainment area (358.60m2)
3. Laundry (127.28 m2)
4. Bicycle storage space (208.91 m2)
5. Restaurant (230.88 m2)
6. Administrative block (107.10 m2)
7. Computer center (76.49 m2)
8. Store (76.14 m2)
9. Gym (150.31 m2)
10. Medical unit (56.21 m2)
11. Pharmacy (54.09 m2)
12. Reception to a residential building (119.59 m2)
13. Movie theater (113.31 m2)
14. Offices, studios, exhibition hall
15. Library--
16. Hall for public discussions (113.63 m2)



Ground Floor Level ±0,00



2nd Floor
Level +4,20



3rd Floor
Level +8,00

Gross Area of the Residential Building (Level 1) - 2940.42 m2
Gross Area of the Hall for public discussions - 211.24 m2

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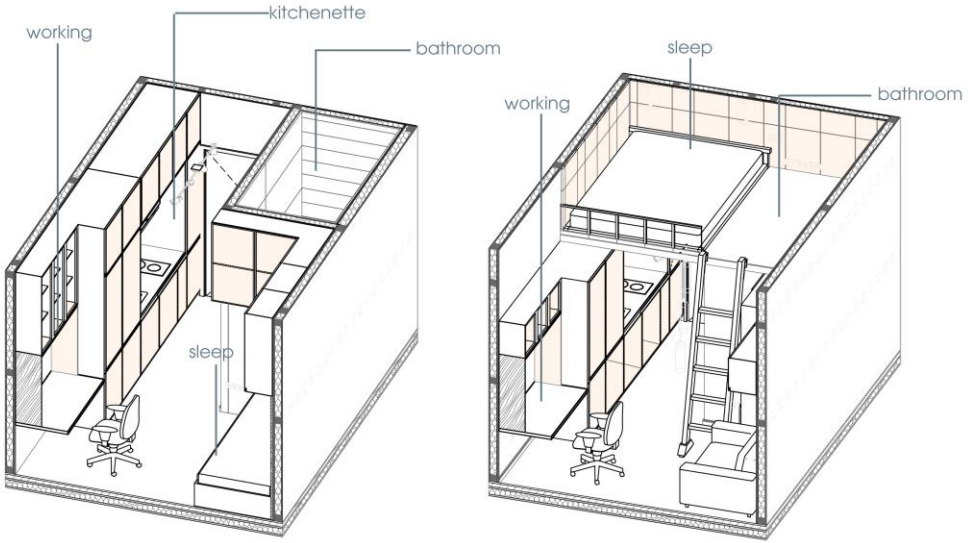
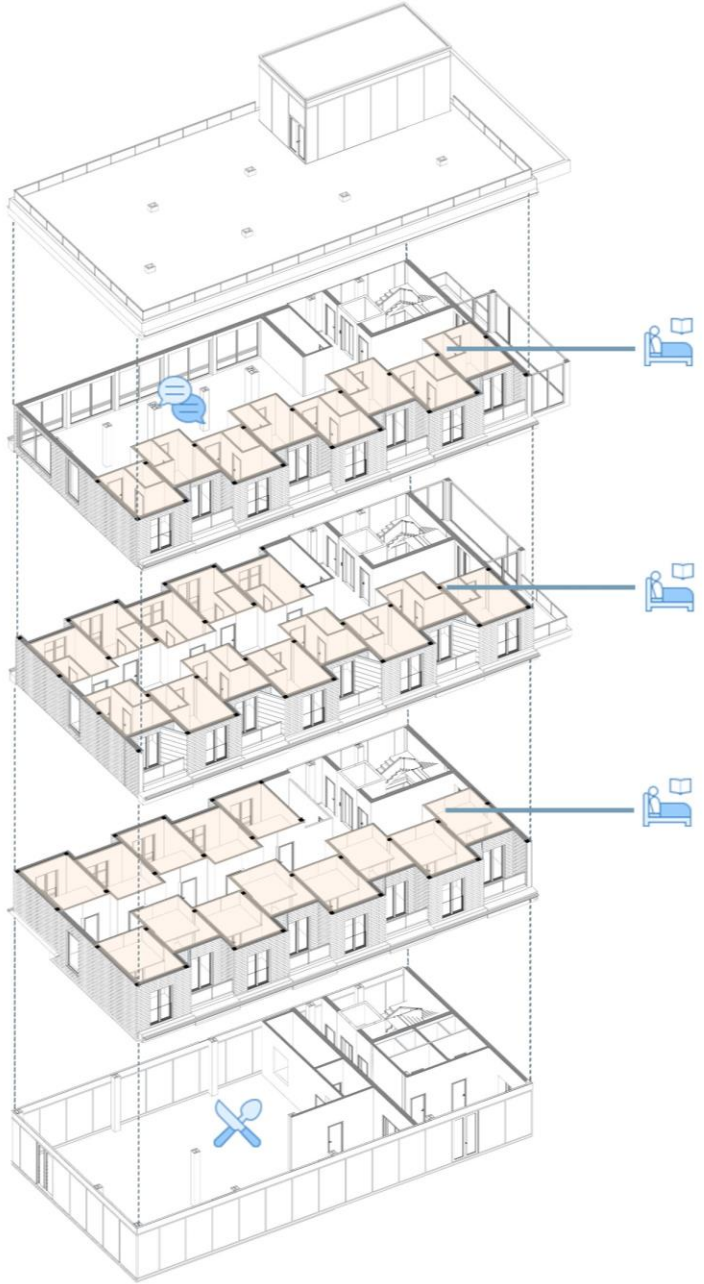
The Rooms

Dorm room single

Dorm room 2-persons



Each residential unit has a separate construction, and on-site they are connected to the steel supporting skeleton of the building, and a finishing facade layer is added to give the overall look of the building.



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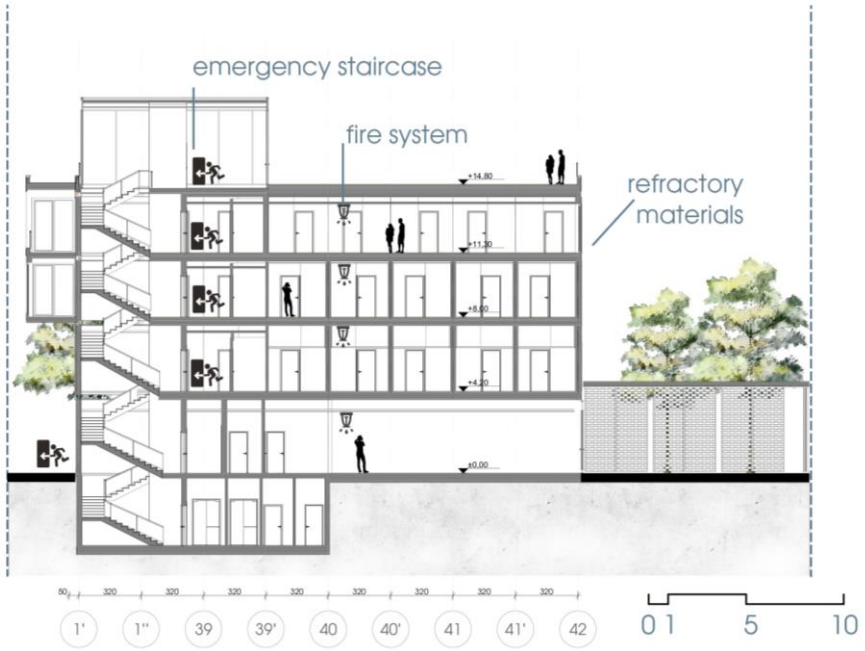
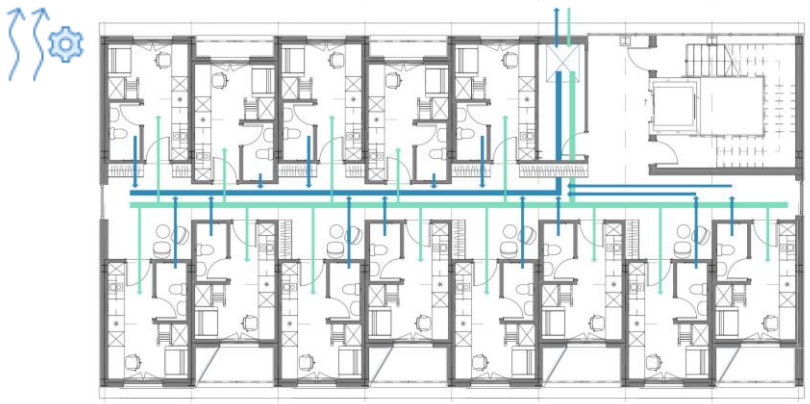
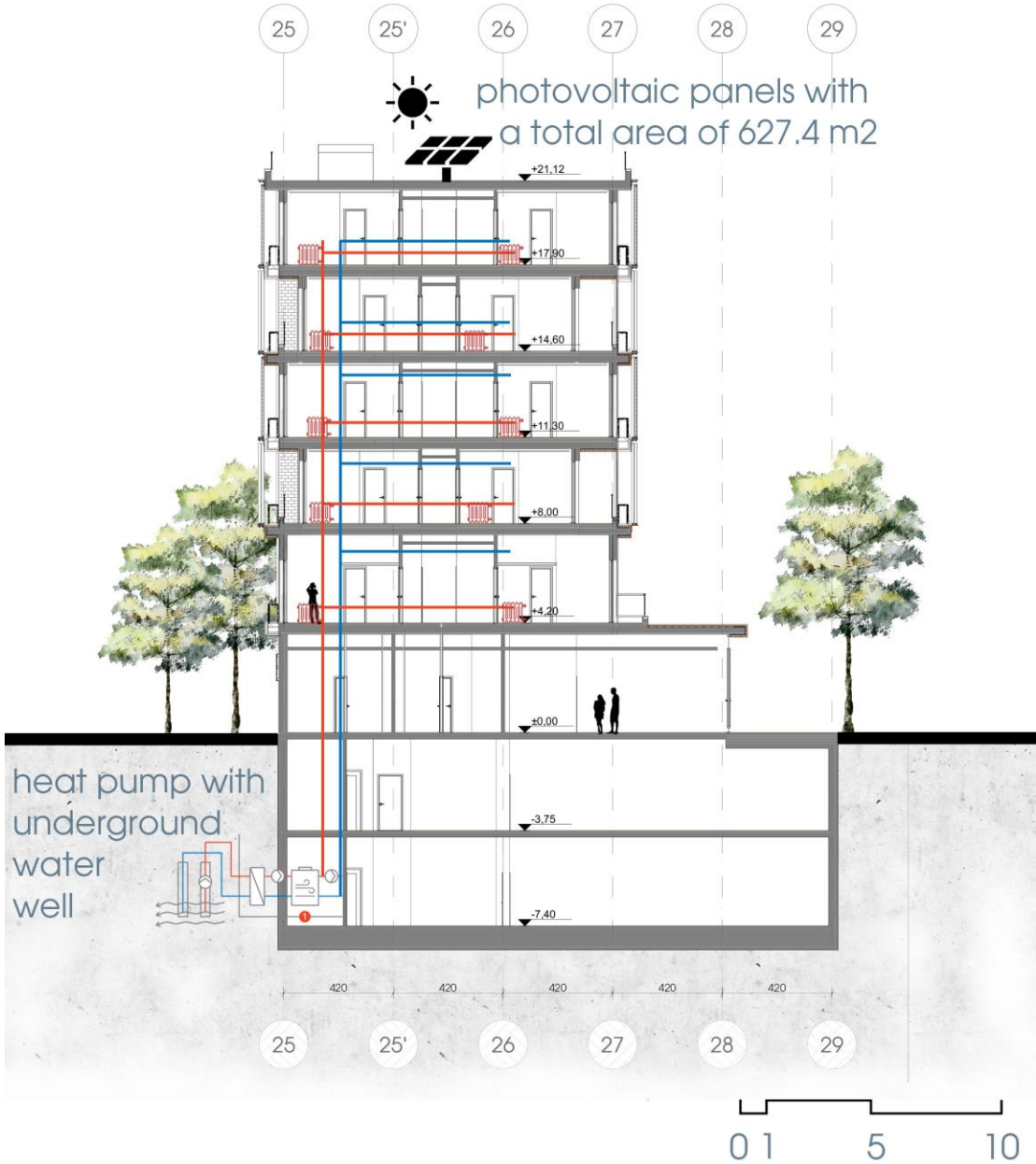
Comfort



Fire Safety



Ventilation



Renewable energy sources

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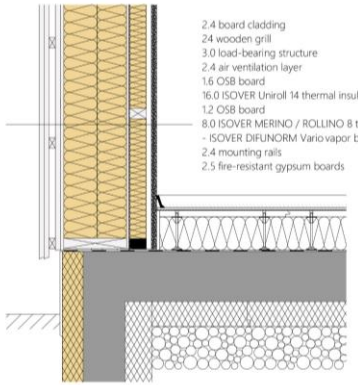
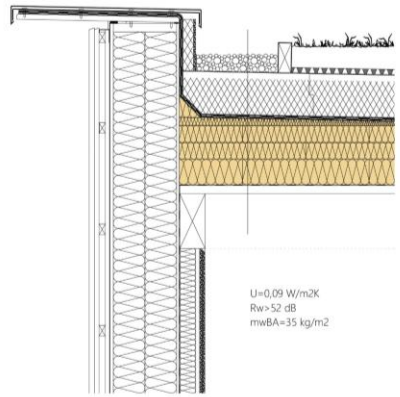
Connection between a facade wall with foundation slab



2.4 board cladding
24 wooden grill
3.0 load-bearing structure
2.4 air ventilation layer
1.6 OSB board
16.0 ISOVER Uniroll 14 thermal insulation felt between farms
1.2 OSB board
8.0 ISOVER MERINO / ROLLINO 8 thermal insulation boards between slatted support grilles 5/8
- ISOVER DIFUNORM Vario vapor barrier
2.4 mounting rails
2.5 fire-resistant gypsum boards

U=0,10 W/m2K
Rw> 45 dB
mwBA=25 kg/m2

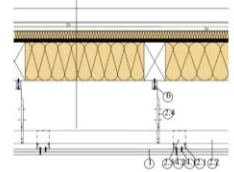
Thermal insulation of a double roof with landscaping



landscaping
8.0 Soil mixture (gravel fraction 16/32 at the edges)
2.5 drainage layer (eg Floradrain FD 25)
0.2 filter layer (geotextile 140 g / m2)
20.0 Styrodur 3035 CS
0.4 waterproofing BITUVER ANTIRADICE GBP 4 P2000 - with anti-root additives
0.4 waterproofing BITUVER TENDER K 4 PH x2
- steam drainage layer BITUMAT V12 FORATO
- bituminous primer BITUVER ECOPRIVER
4.0 ISOVER ORSIL SD 2/4 stone wool roofing boards with a slope
8.0 ISOVER ORSIL T 8 stone wool roofing panels
12.0 stone wool roofing boards ISOVER ORSIL T 12
- DIFUNORM VARIO vapor barrier
4.0 Fire protection cladding

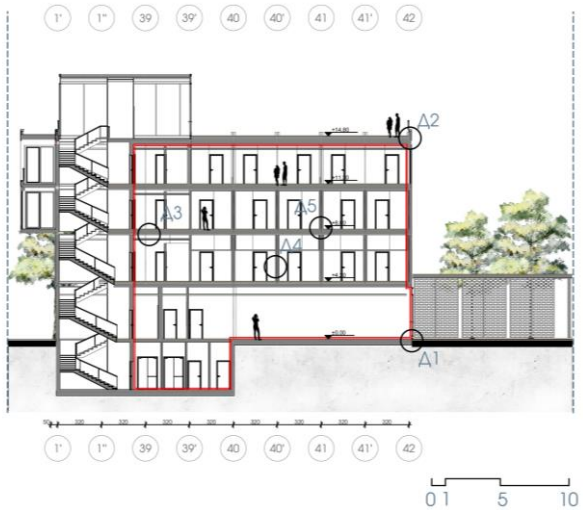
U=0,09 W/m2K
Rw>52 dB
mwBA=35 kg/m2

Slabs between floors + suspended ceiling



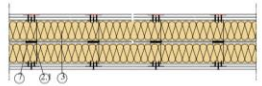
0.5 linoleum
3.8 chipboard V100 2 x 19 mm - glued, screwed
- polyethylene foil
3.5 impact protection boards ISOVER Trittschalldmmplatte T TDPT 35/35
1.6 V20 pressed wood panel
18.0 ISOVER Uniroll-Klemmfilz UNI 18 thermal insulation felt on a wooden grill
4.0 air ventilation layer on metal profiles
1.25 gypsum plasterboard fire protection panels GKF 12.5
1.25 gypsum plasterboard fire protection panels GKF 12

1. Rigips RF plane (DF)
2.1 Mounting Rigips CD profile 0.6 mm
2.2 Supporting Rigips CD profile 0.6 mm
2.4 Rigips anchor quick hanger
2.5 Cross connection for CD profile on two levels
3 Mineral wool insulation
4.1 Rigips screws TN 212/25
6. Fixing to the concrete ceiling - metal dowel Rigips DN6

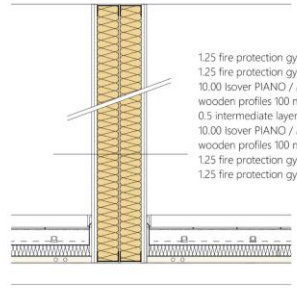


Connection between modular housing units

1. Rigips plane
2.1 Rigips profile CW100 / 0.6 mm
2.2 Rigips profile UW100 / 0.6 mm
3. Mineral wool insulation
4.1 Rigips screws TN 212/25
4.2 Rigips screws TN 212/35
5. Rigips joint filler
6. Connection with the solid wall - Rigips dowel 6/35
7. Sealing tape



Partition wall with with steel construction + floor



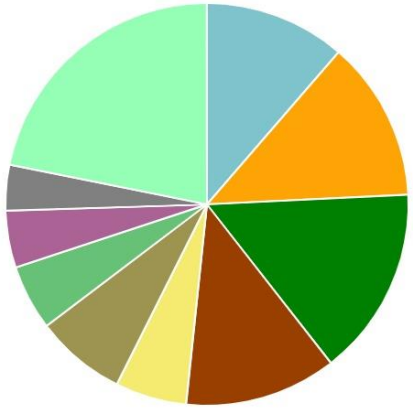
1.25 fire protection gypsum boards GKF 12.5
1.25 fire protection gypsum boards GKF 12.5
10.00 Isover PIANO / AKUSTO 10 heat and sound insulating felt between wooden profiles 100 mm
0.5 intermediate layer
10.00 Isover PIANO / AKUSTO 10 heat and sound insulating felt between wooden profiles 100 mm
1.25 fire protection gypsum boards GKF 12.5
1.25 fire protection gypsum boards GKF 12.5

ISOVER SAINT-GOBAIN
Rigips SAINT-GOBAIN
weber SAINT-GOBAIN
SAINT-GOBAIN

Carbon emissions

Global warming kg CO2e - Classifications

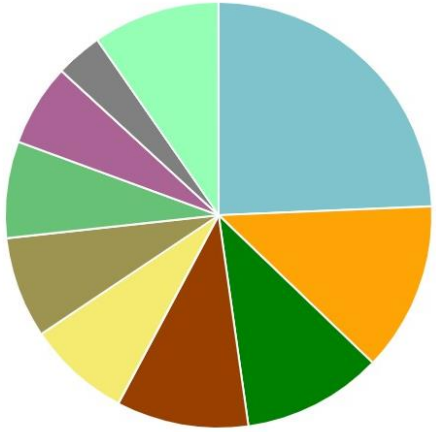
- 1.2.1 Frame (beams, columns and slabs) - 11.4%
- 1.2.2 Upper floors - 12.9%
- 1.3.1 Ground floor slab - 15.2%
- 1.3.2 Internal walls, partitions and doors - 12.2%
- 1.4.1. External wall systems, cladding and shading devices - 5.7%
- 1.4.3 External paints, coatings and renders - 7.3%
- 2.1.5 Floor coverings and finishes - 5.2%
- 2.3.1 Heating plant and distribution - 4.6%
- 2.3.3 Electricity generation and distribution - 3.7%
- Other classifications - 21.8%



Global warming kg CO2e - Resource types

This is a drilldown chart. Click on the chart to view details

- Metals - 24.3%
- Insulation - 10.6%
- Gypsum and plaster - 7.8%
- Doors & windows - 7.3%
- Construction site - 3.6%
- Ready-mix - 12.8%
- Installations and systems - 10.0%
- Precast - 7.7%
- Bricks and ceramics - 6.2%
- Other resource types - 9.6%

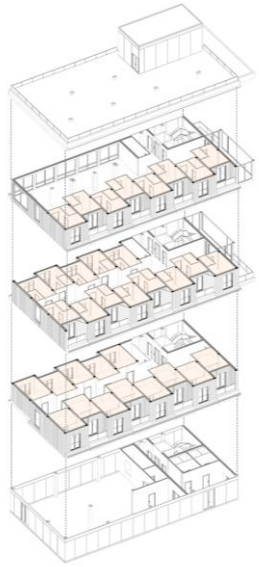


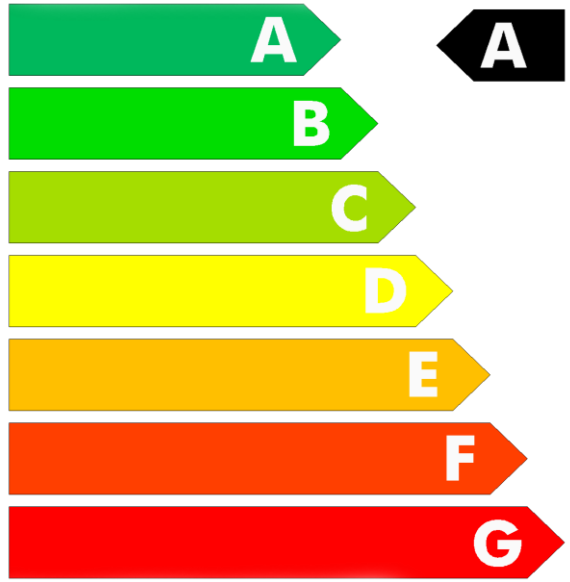
564 Tons CO_2e

18.71 kg CO_2e / m^2 / year

28 211 € Social cost of carbon

The calculations of the carbon emissions are made for one module of the whole building with a gross area of 1004.55 m2 and 4 floors.





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