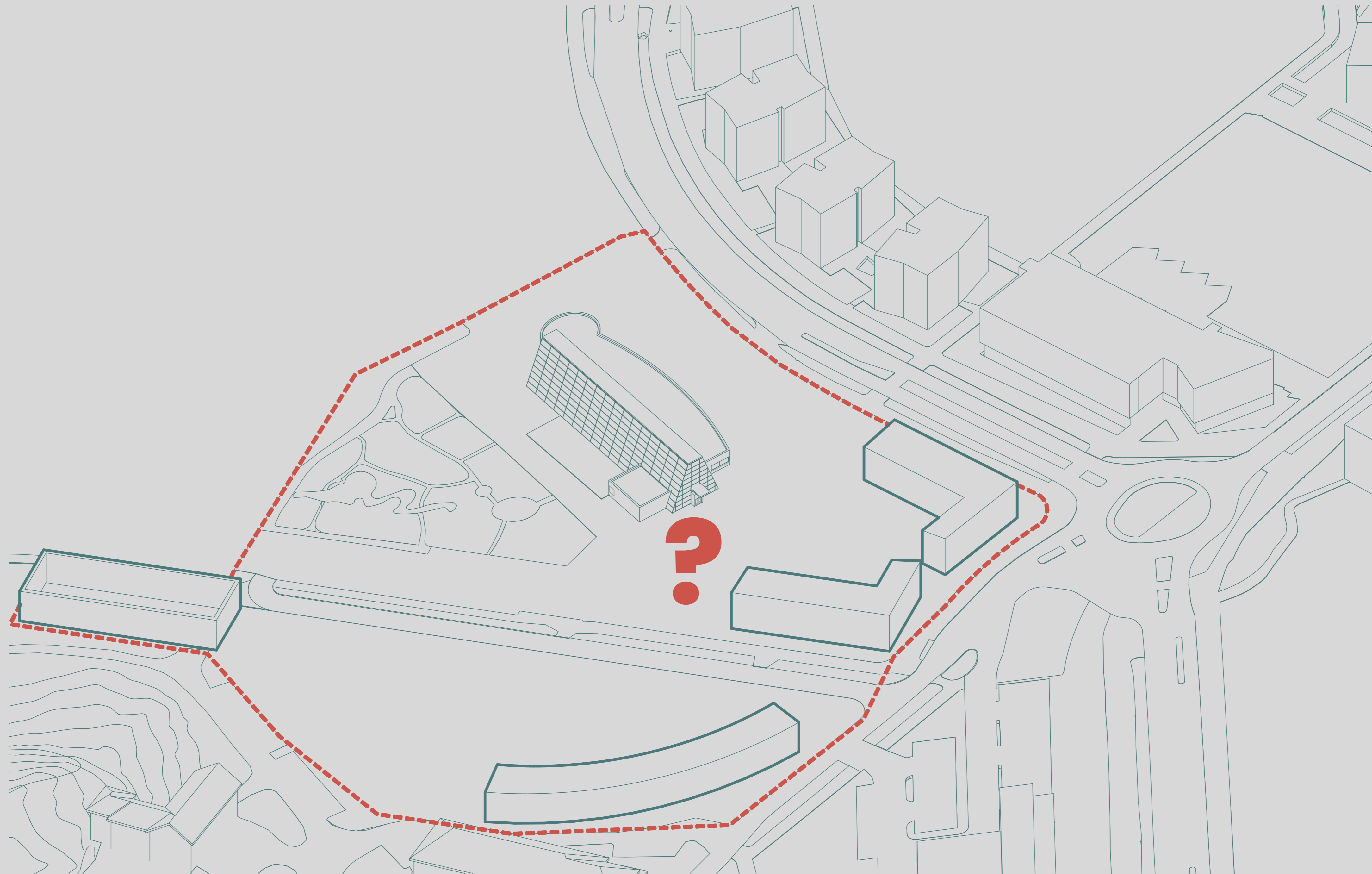


GARDENIA RESIDENCE





introduction

Country:	Slovakia
University:	STU Bratislava - Faculty of civil engineering
Name:	Adam Hronský
Presentation order:	#18

anotation

The Gardenia residence is a city block that has been designed with Scandinavian architecture in mind, with a focus on creating high-quality public spaces. The site is located between a university campus and a research center, and the goal of the design was to connect them and create an attractive space in between. The site includes the former greenhouse of the botanical garden and the Japanese garden, so their incorporation was crucial to the design.

The new buildings consist of 2 sectional and 4 point dwellings. All of them have an open ground floor that houses facilities such as a fitness center, spa, cafes, and retail shops. The housing is located on the upper floors. Additionally, there is an office building on the site that has been transformed into housing so that its style fits in with the rest of the design. Finally, a former museum has been revitalized non-invasively to act as a monument that links history with the present.

The entire design was created with an emphasis on sustainability, making it an environmentally-friendly and energy-efficient project.

location



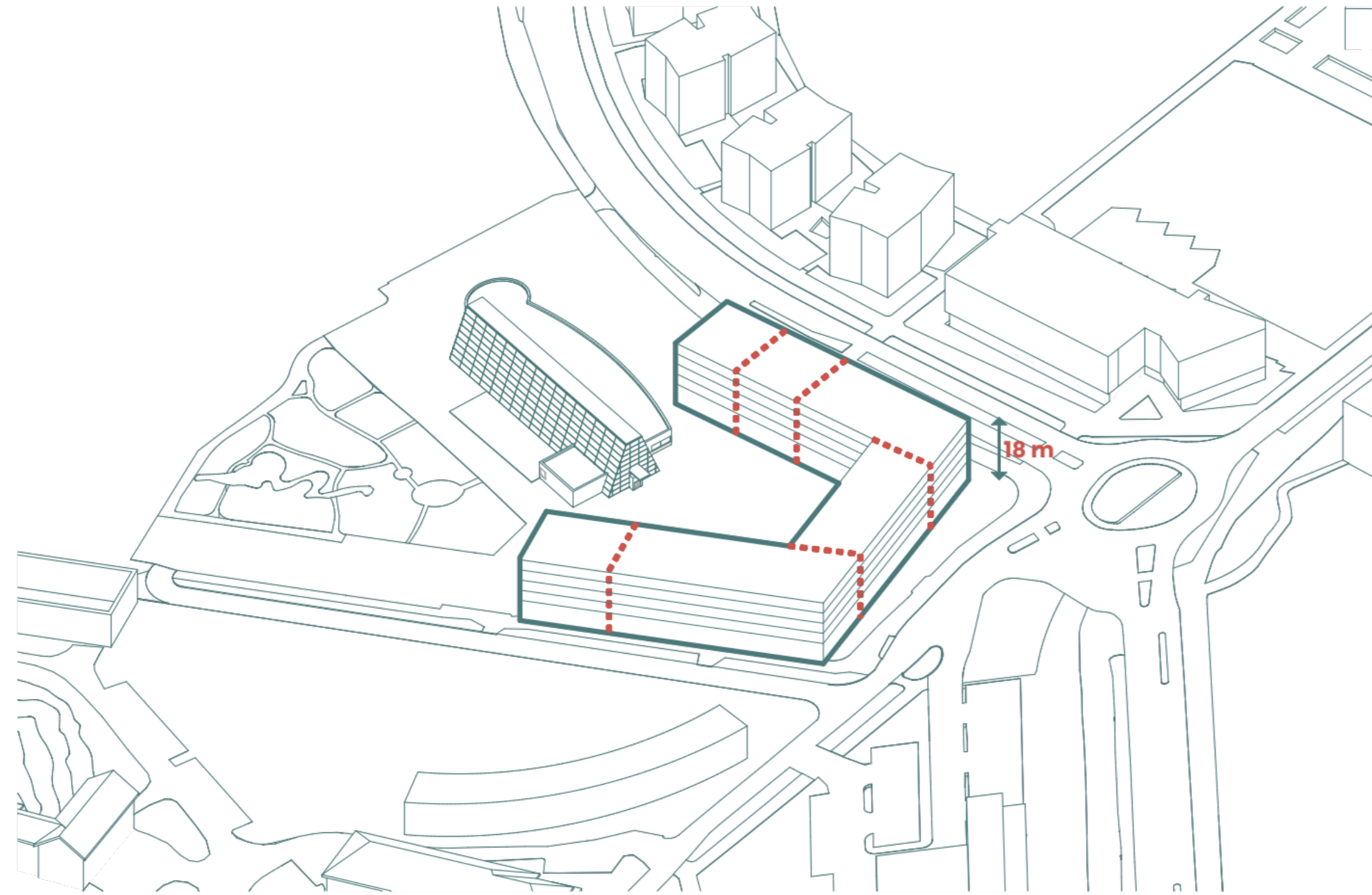
←---→ cycling path ←---→ tram line

Buildings B



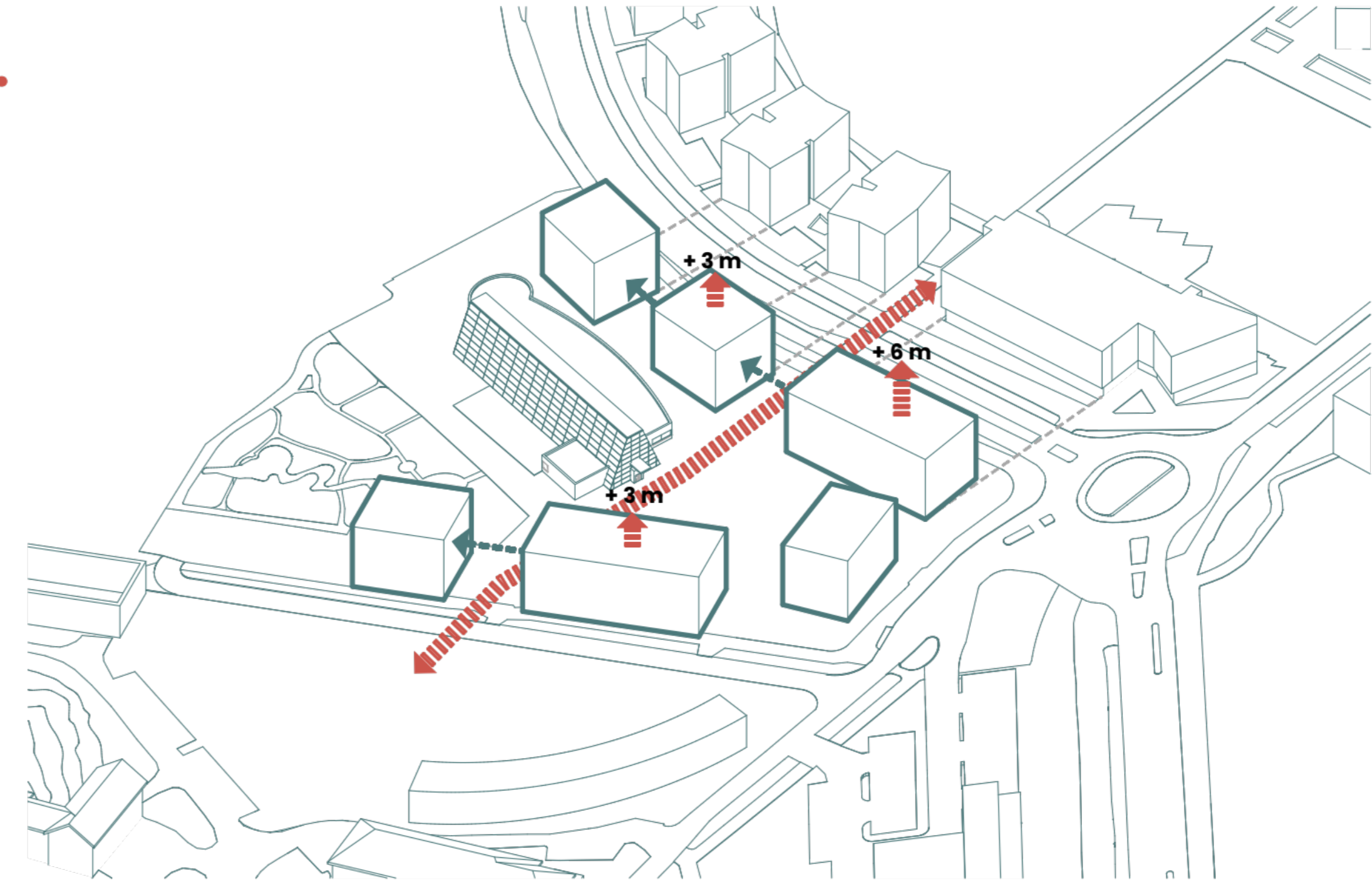
concept diagrams

1.



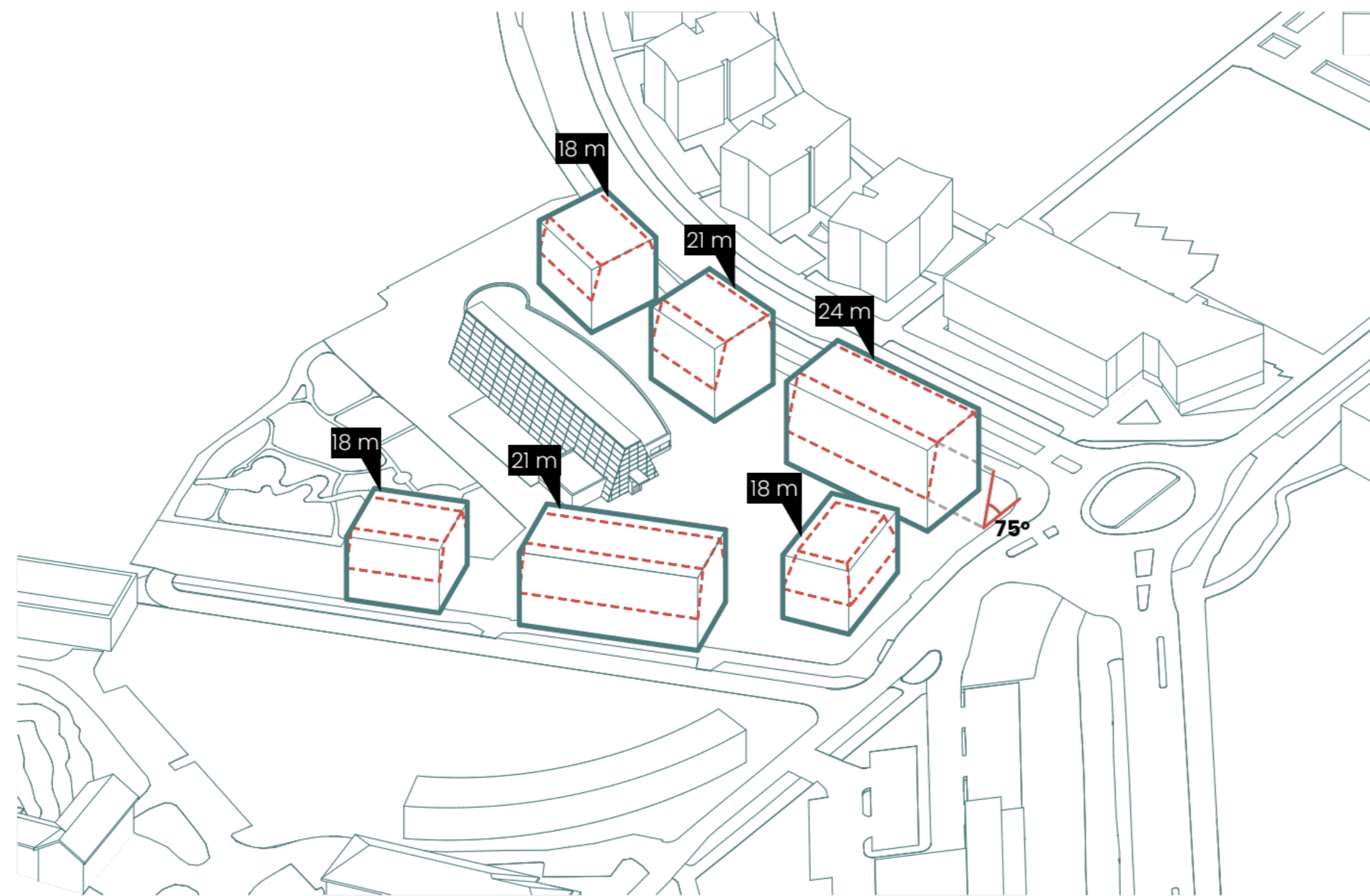
Connected volume - creating massive block build surrounding the designed area on its edges

2.



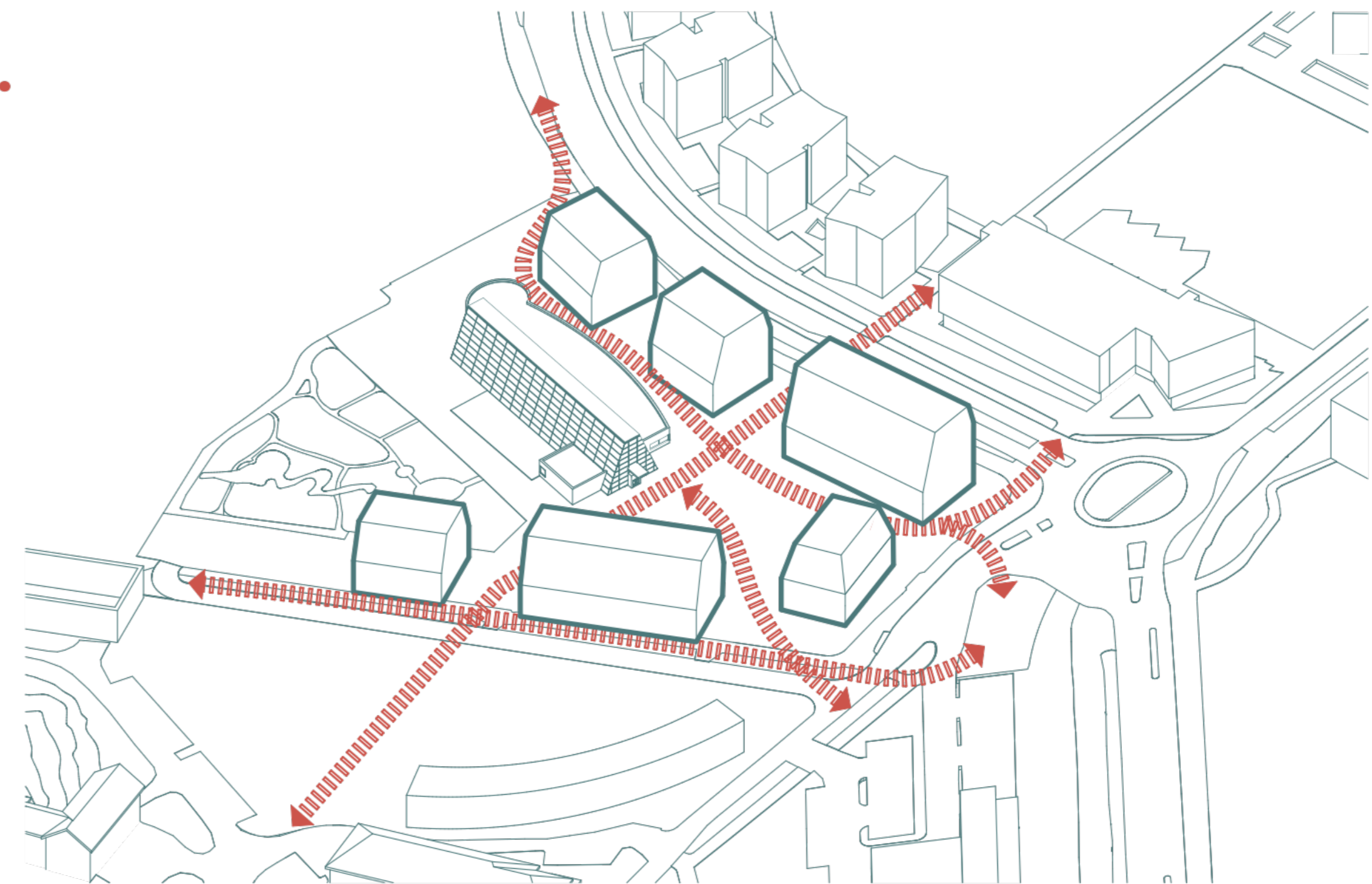
Separated Volumes - reaction to the surroundings and height gradation creating a height dominance at the corner of the plot

3.



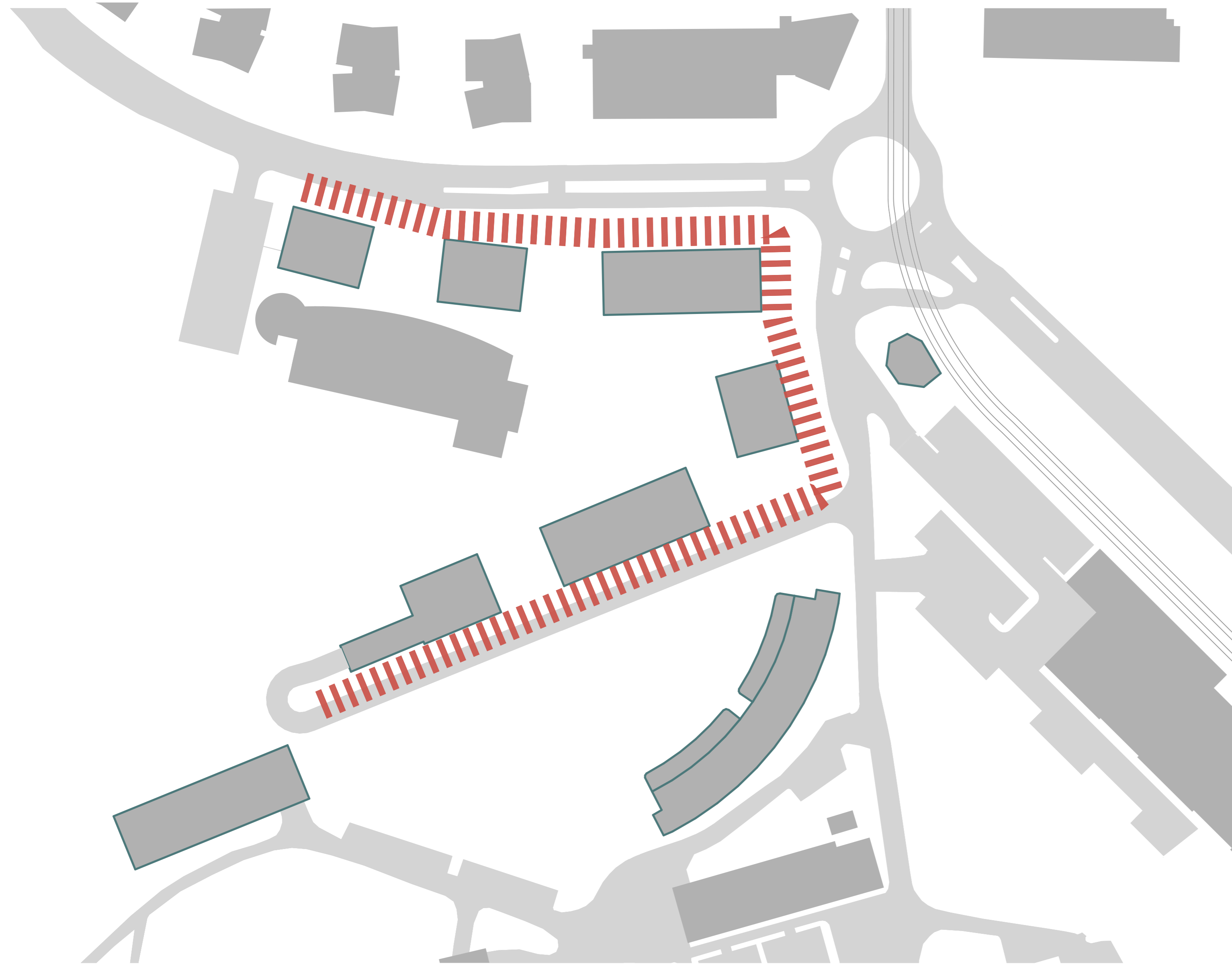
Compact buildings - tilting the facades of the residential floors to achieve better internal illumination and visual reduction of the buildings

4.

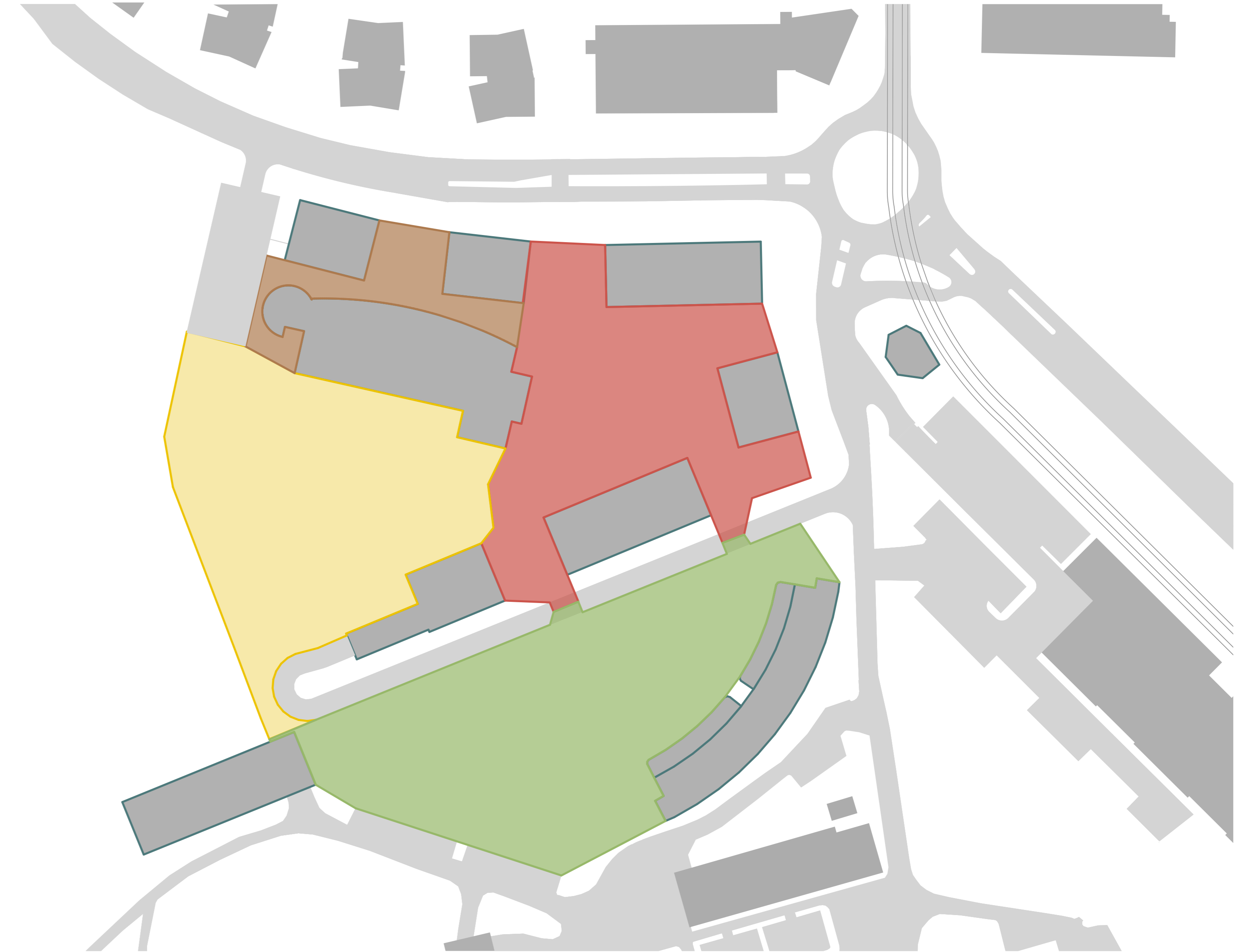


Transparent city block - the result is an open city block that does not impede pedestrian movement and creates a new centre of Viikki

concept diagrams



active front zones

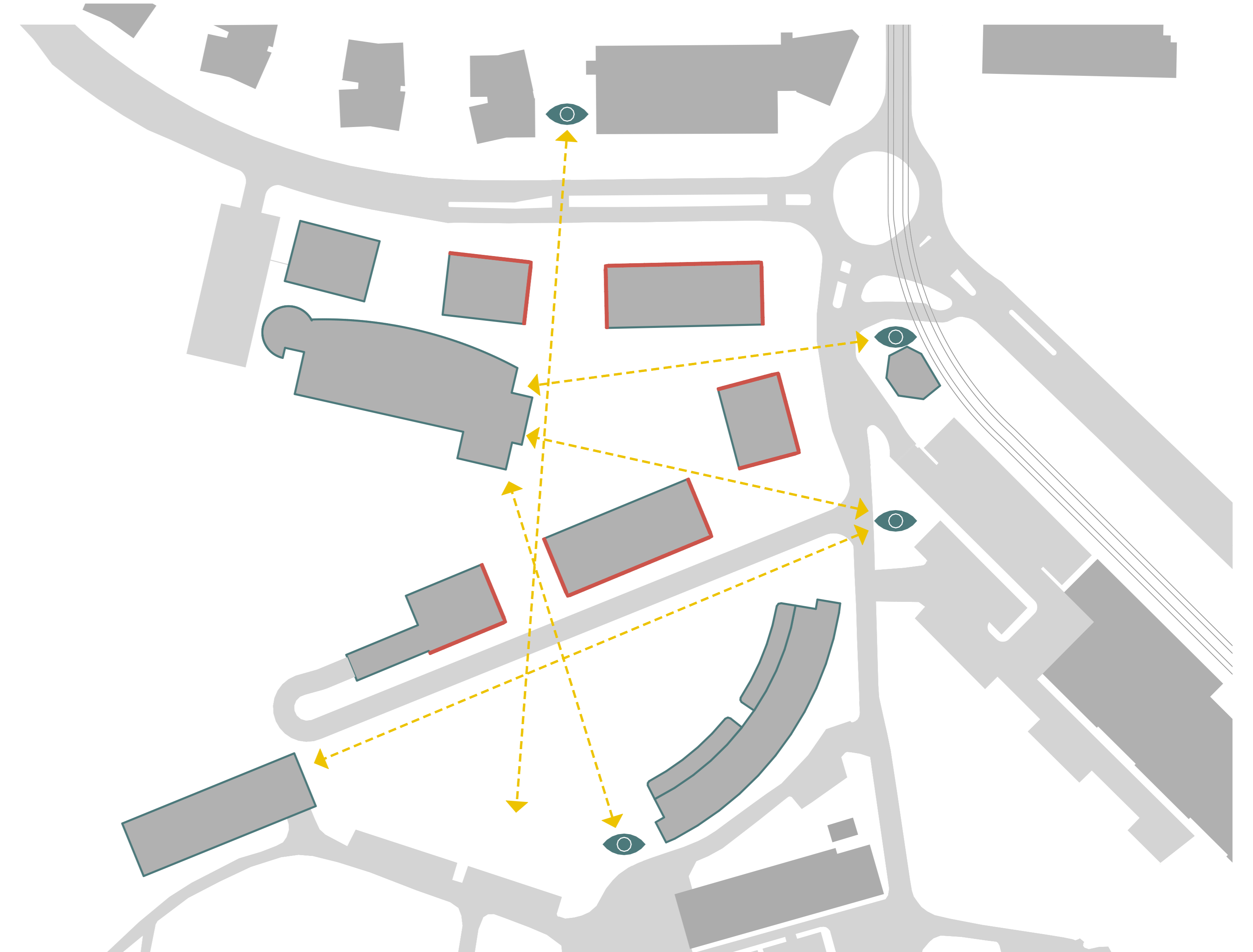


linked open spaces

concept diagrams

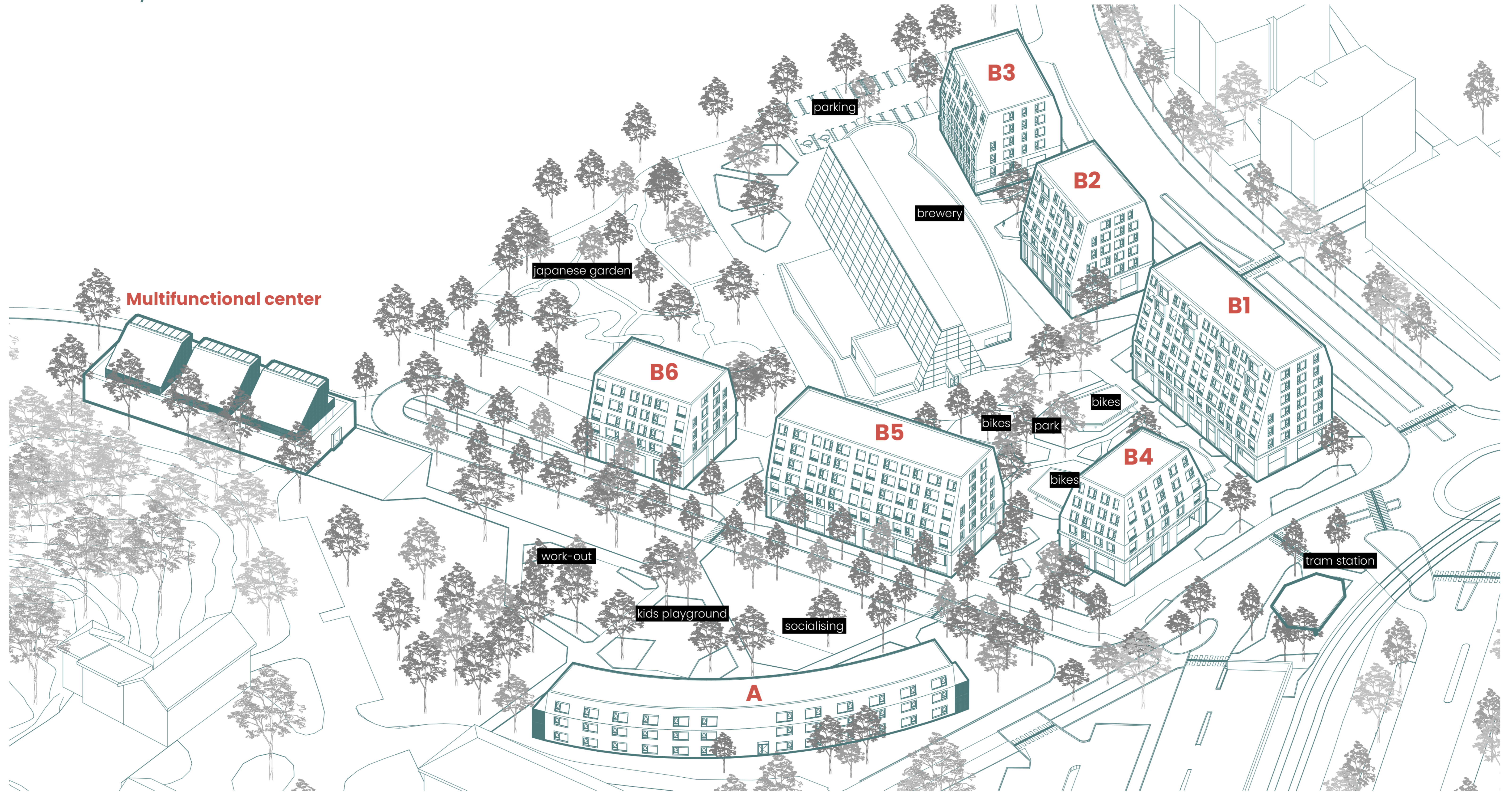


connectivity and permeability

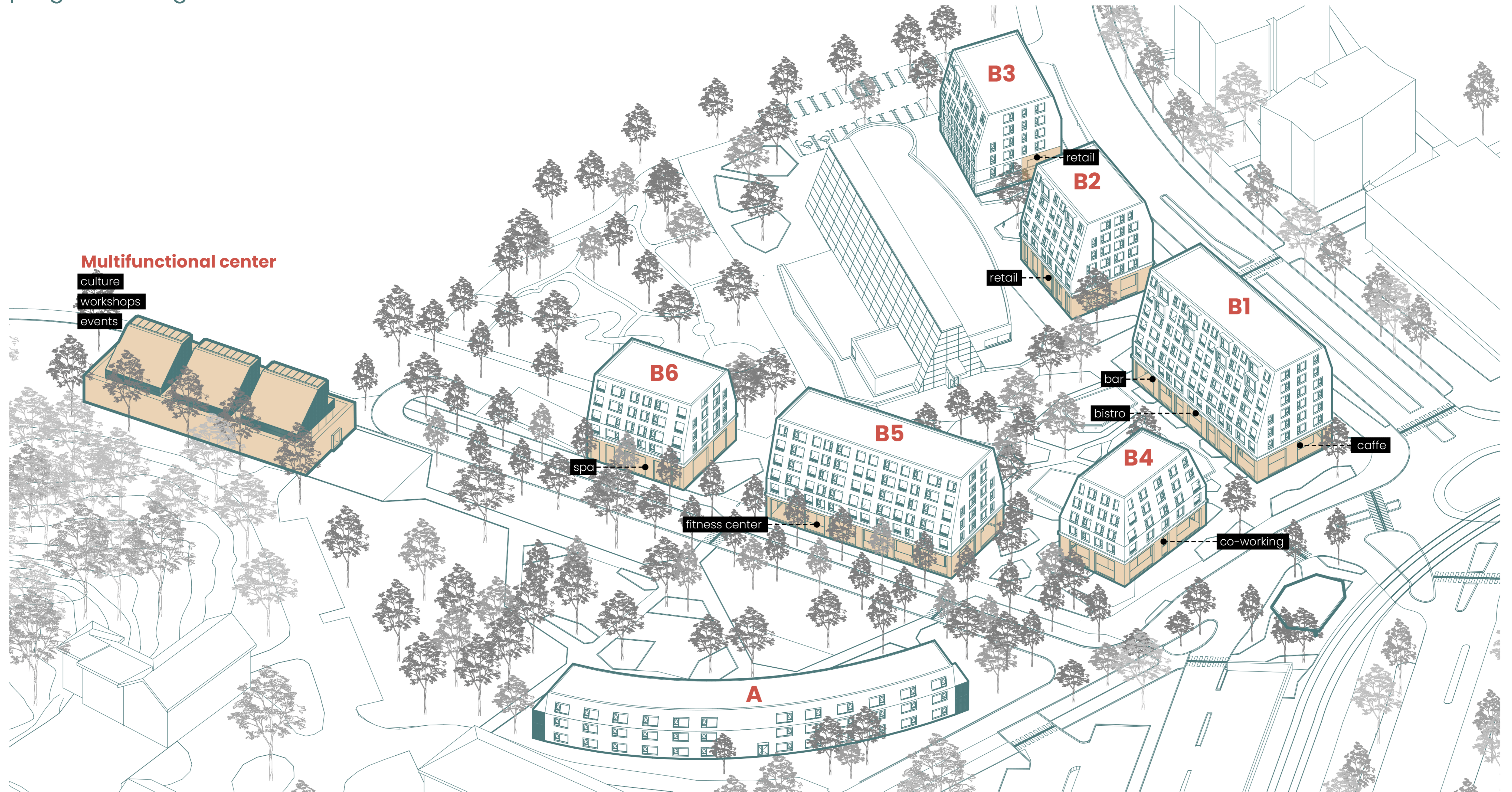


noise protection & transparency

axonometry

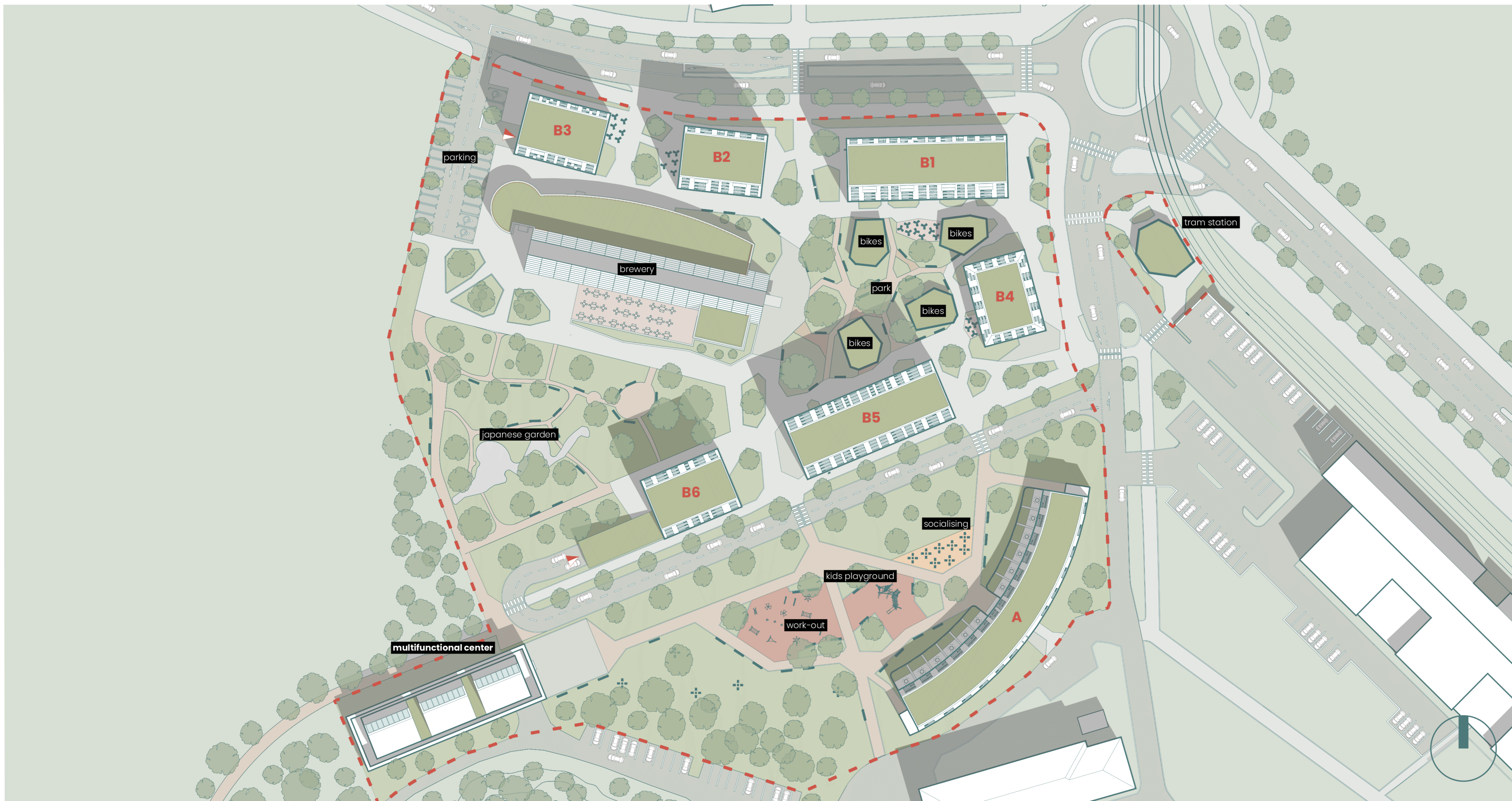


programme diagram

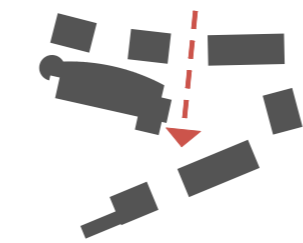
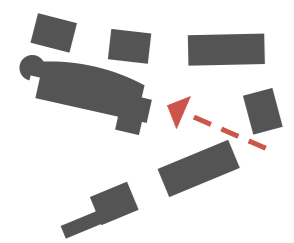




masterplan

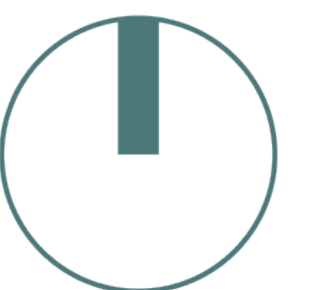
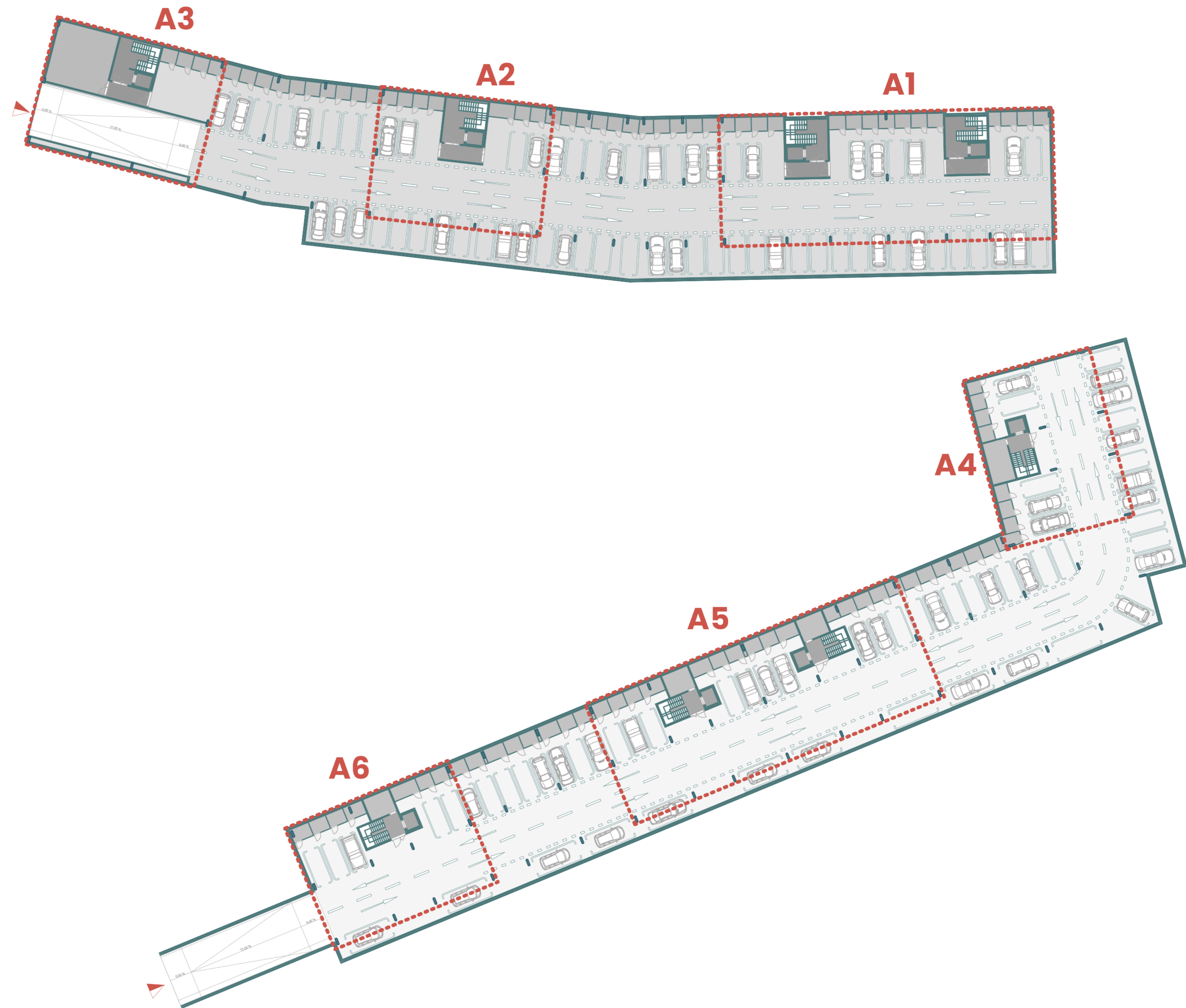


visualisations

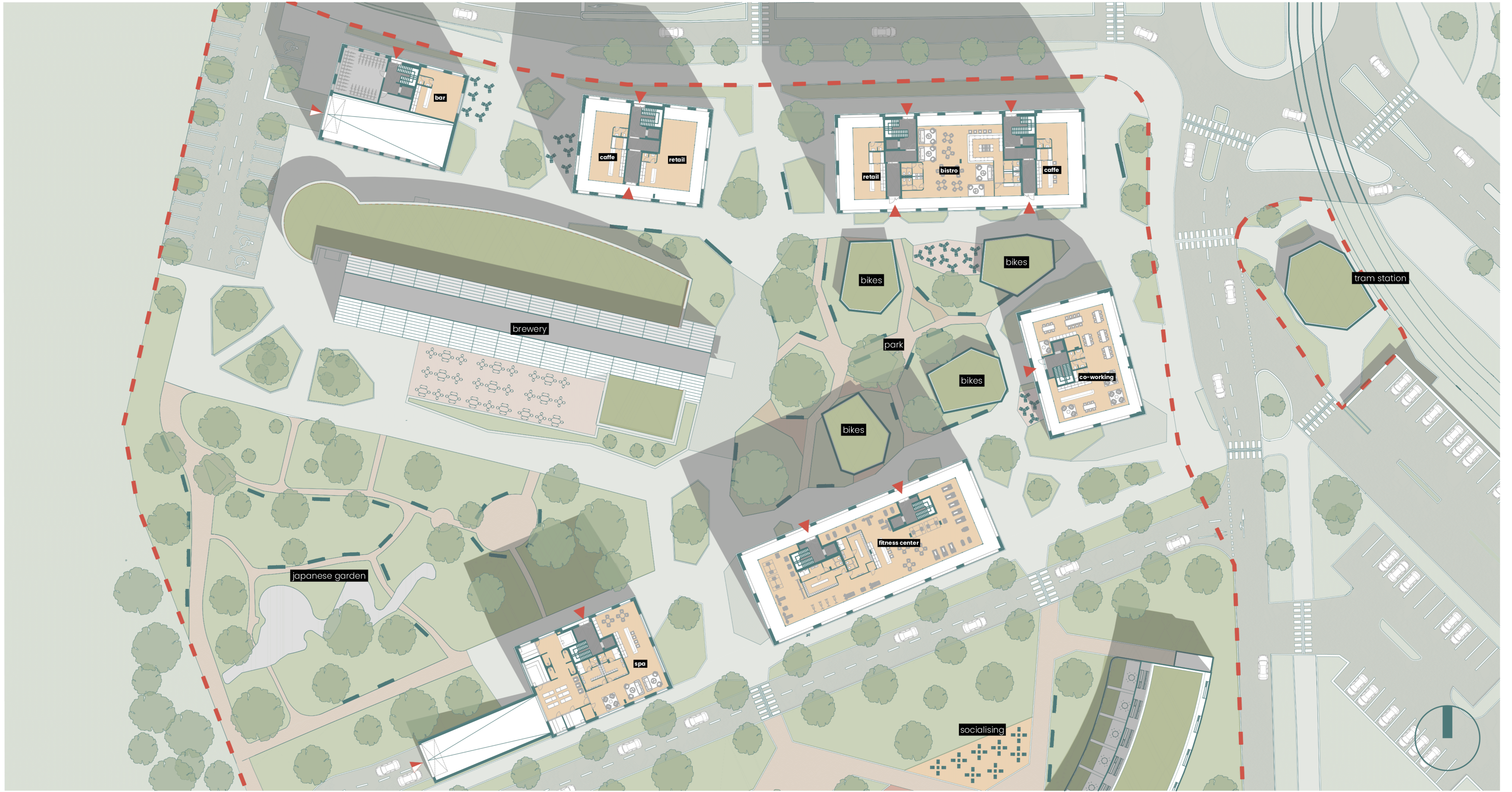


underground parking

The Gardenia Residences features two separate buildings for its underground parking. The design objective was **to minimize the buildings' footprint** to allow for natural growth of greenery in the inner courtyard. The northern building has **61 parking spaces**, while the southern building has **66 spaces**. Together, they offer **a total of 127 parking spaces** which is sufficient for the future residents. the desired flatmix.



1st. floor



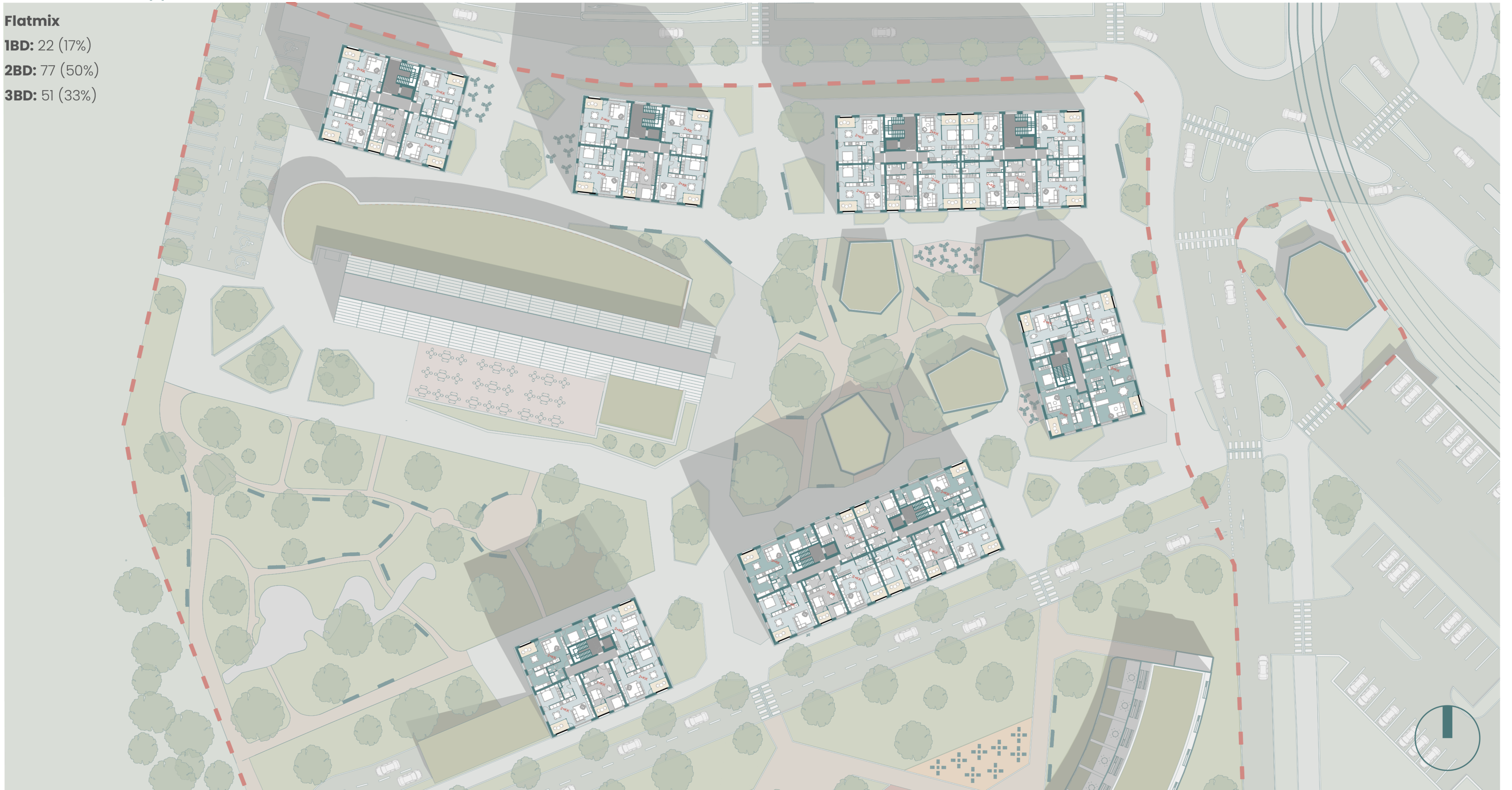
2nd. floor - typical

Flatmix

1BD: 22 (17%)

2BD: 77 (50%)

3BD: 51 (33%)

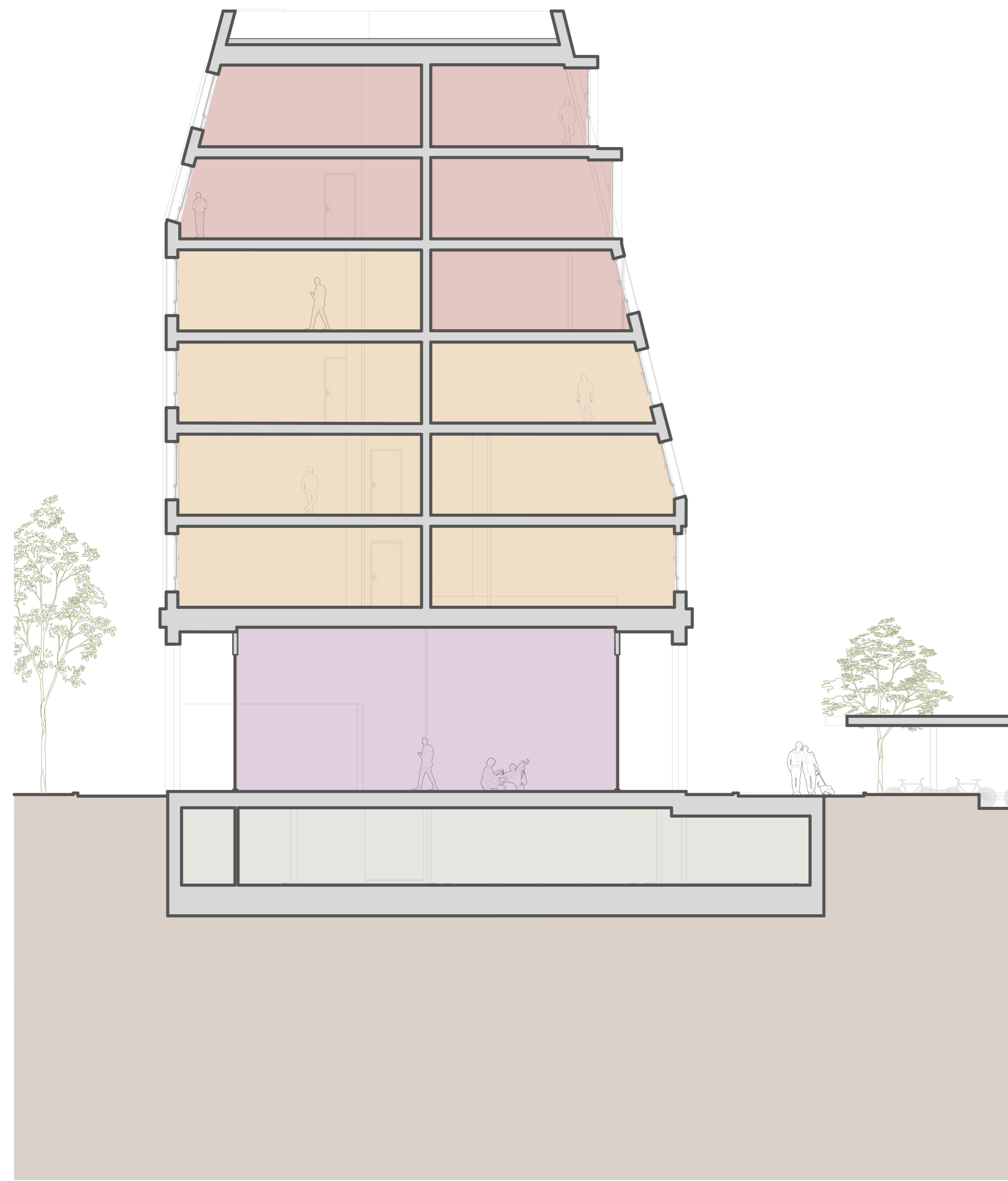


building modules

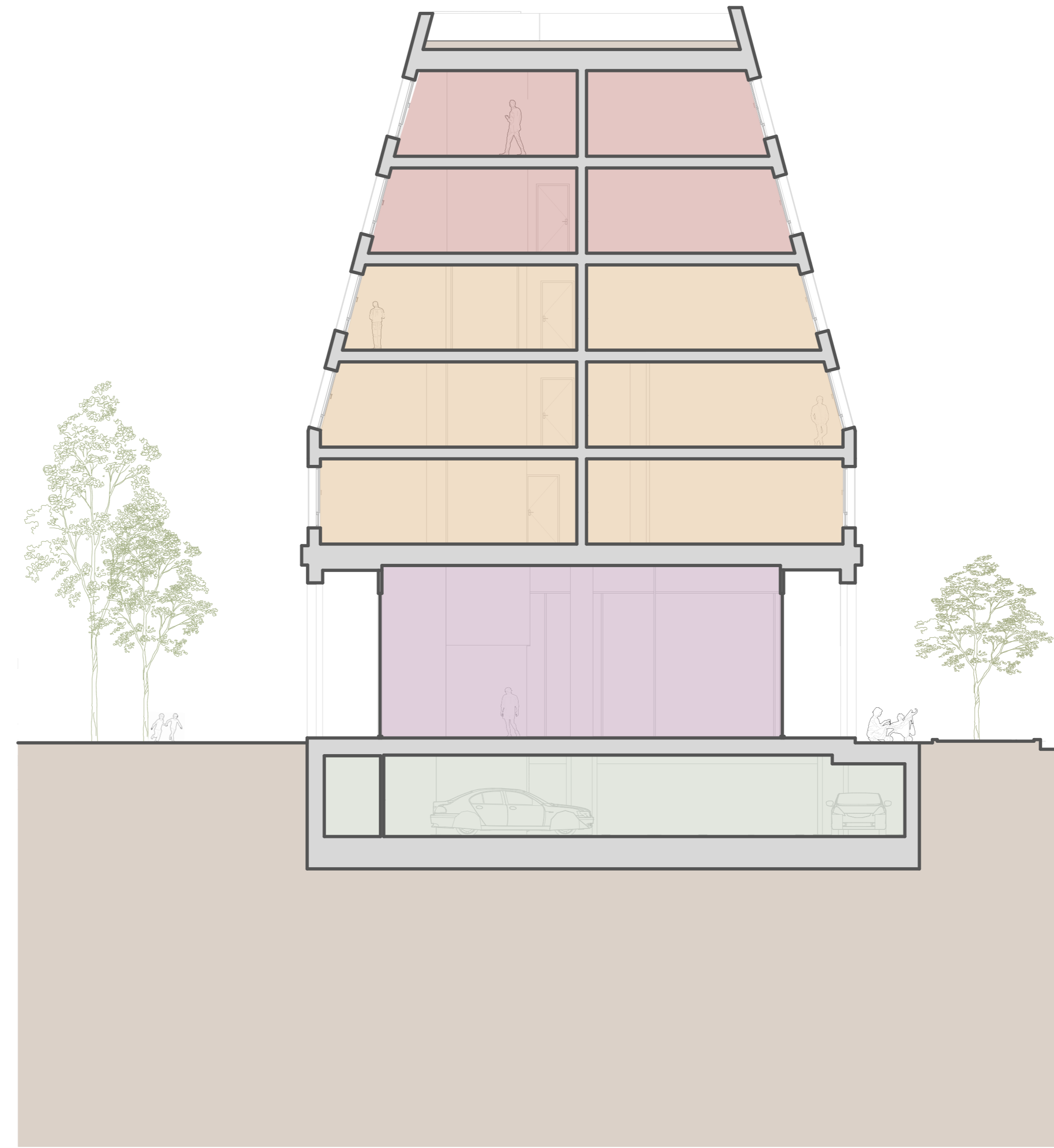


The residential floors of the newly constructed buildings have been designed using a **CLT wall bearing system**, with reinforced concrete vertical cores **as fire escape routes**. This modular system can be customized according to the requirements of the developer. The individual flats can be interconnected, offering **flexibility** in terms of changing the size of the flats based on light requirements and preferred flatmix.

section diagrams

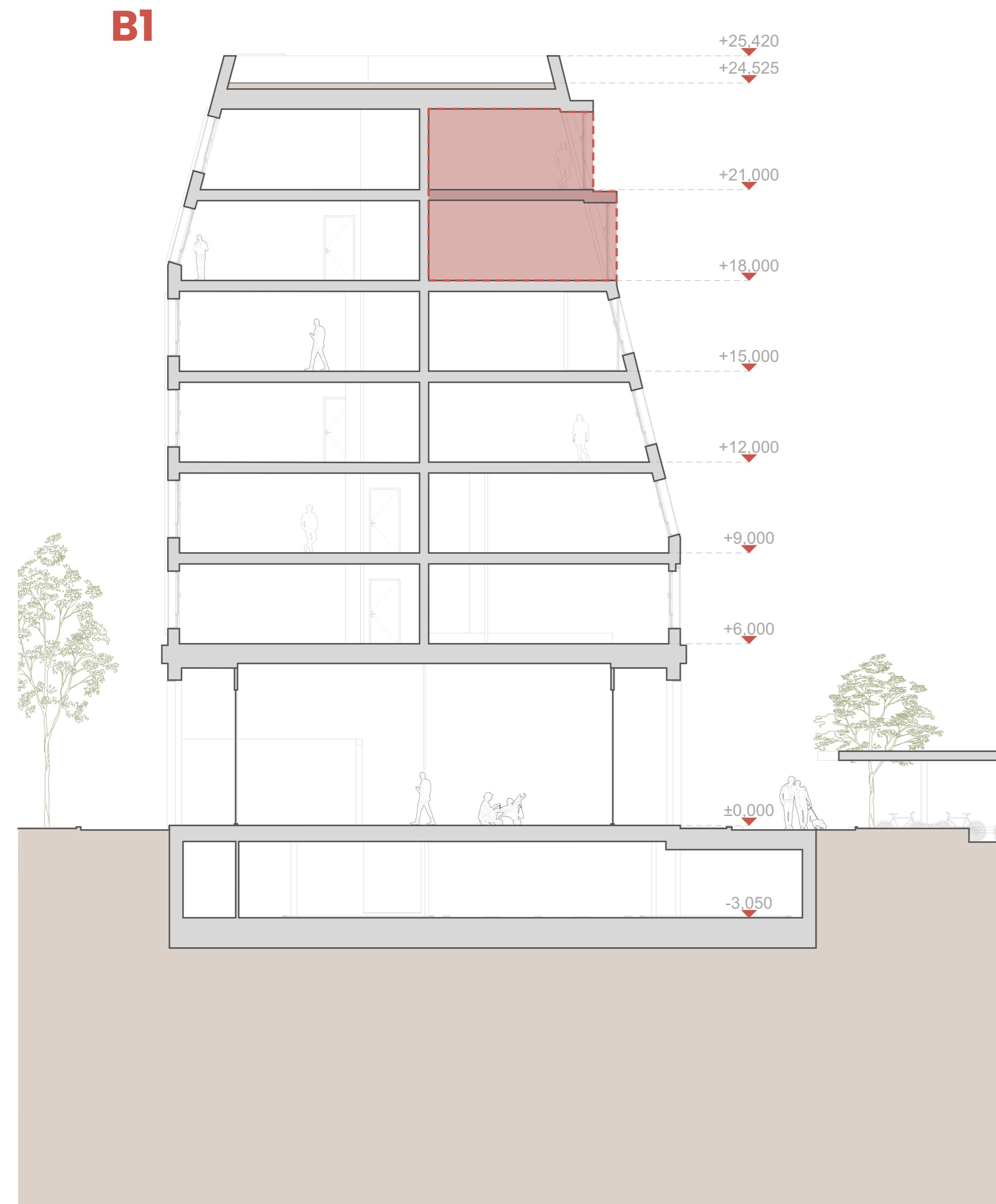


Building B1



Building B5

- 3-BD
- 1-BD / 2-BD
- retail
- garage



dinning

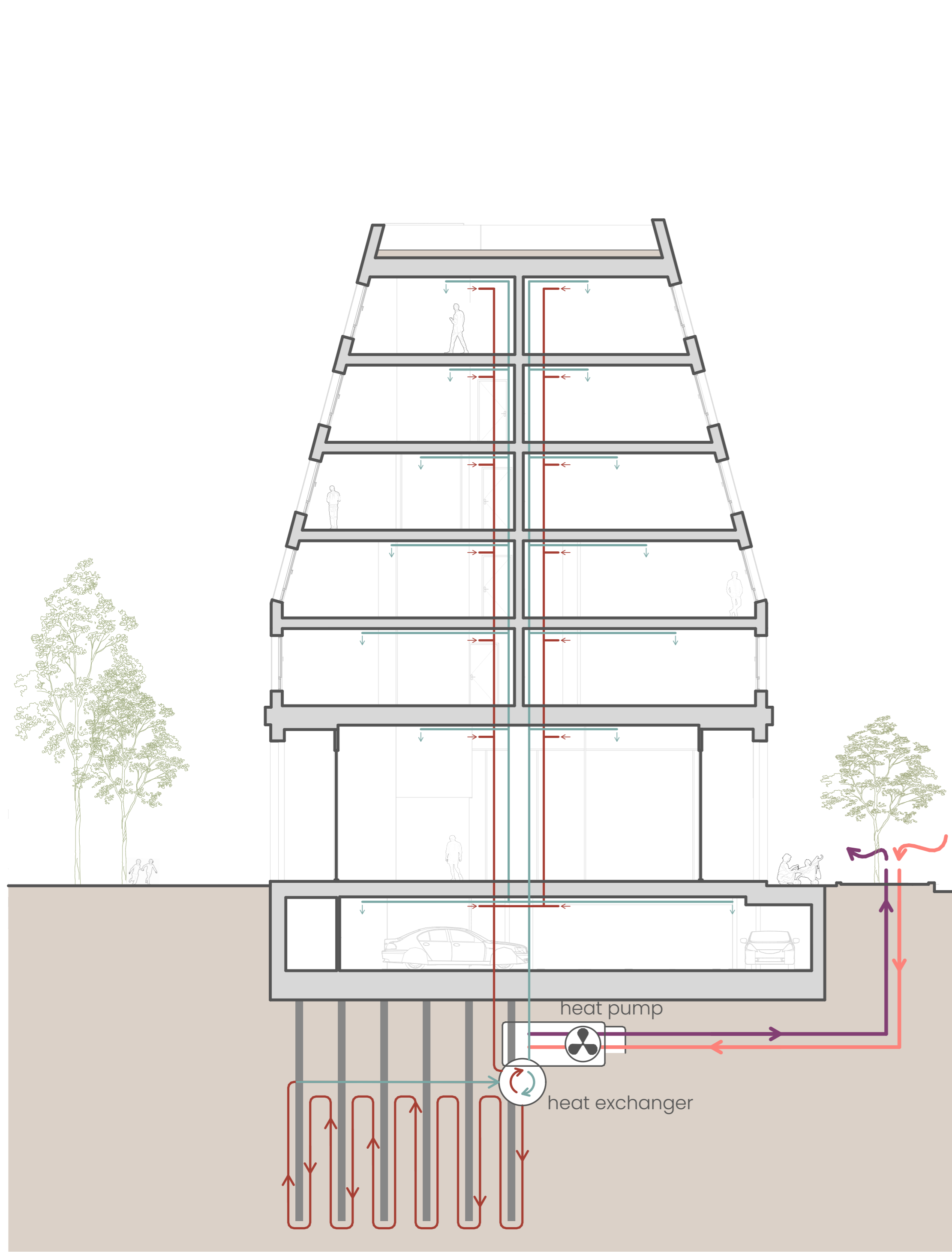


Living room

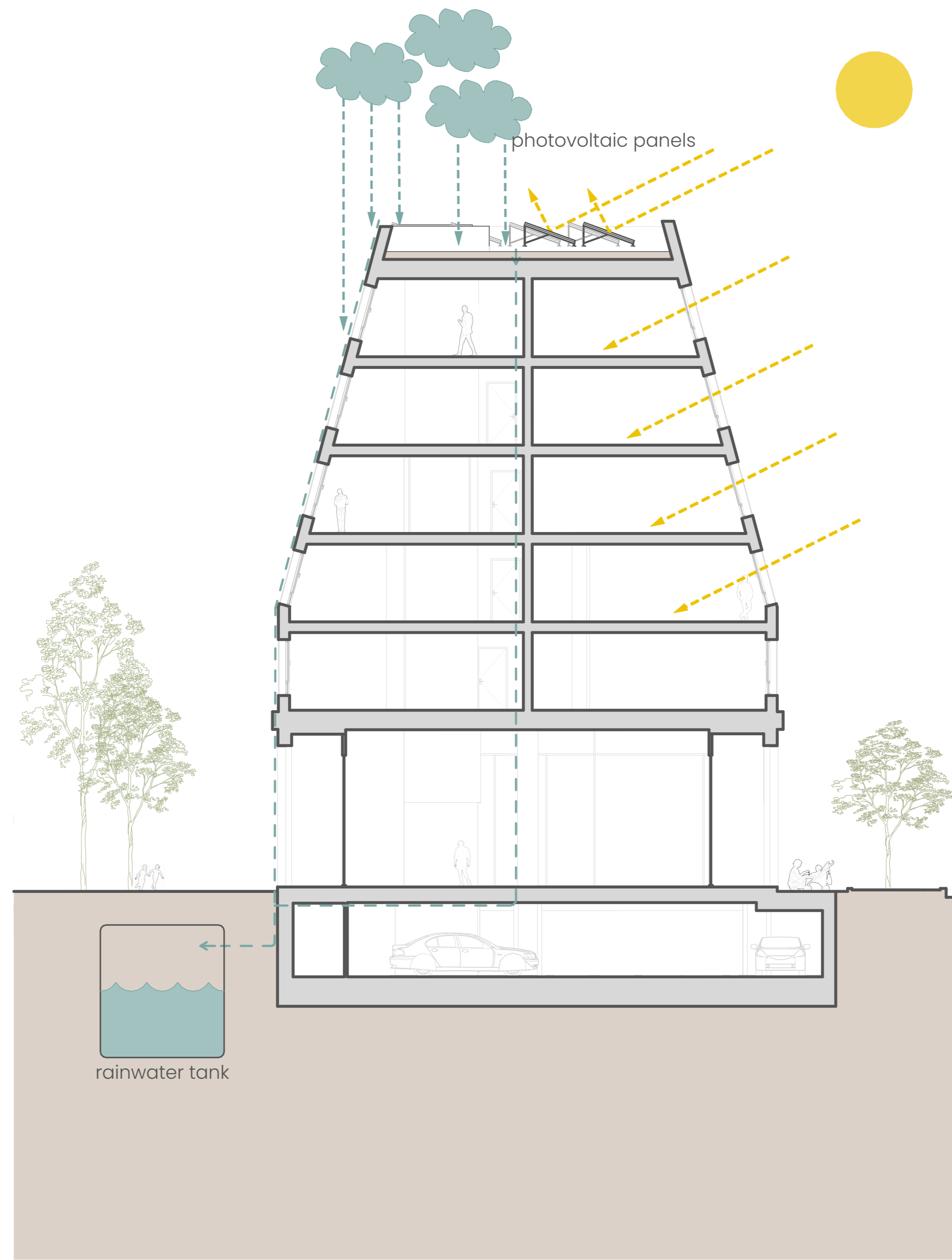


Living room

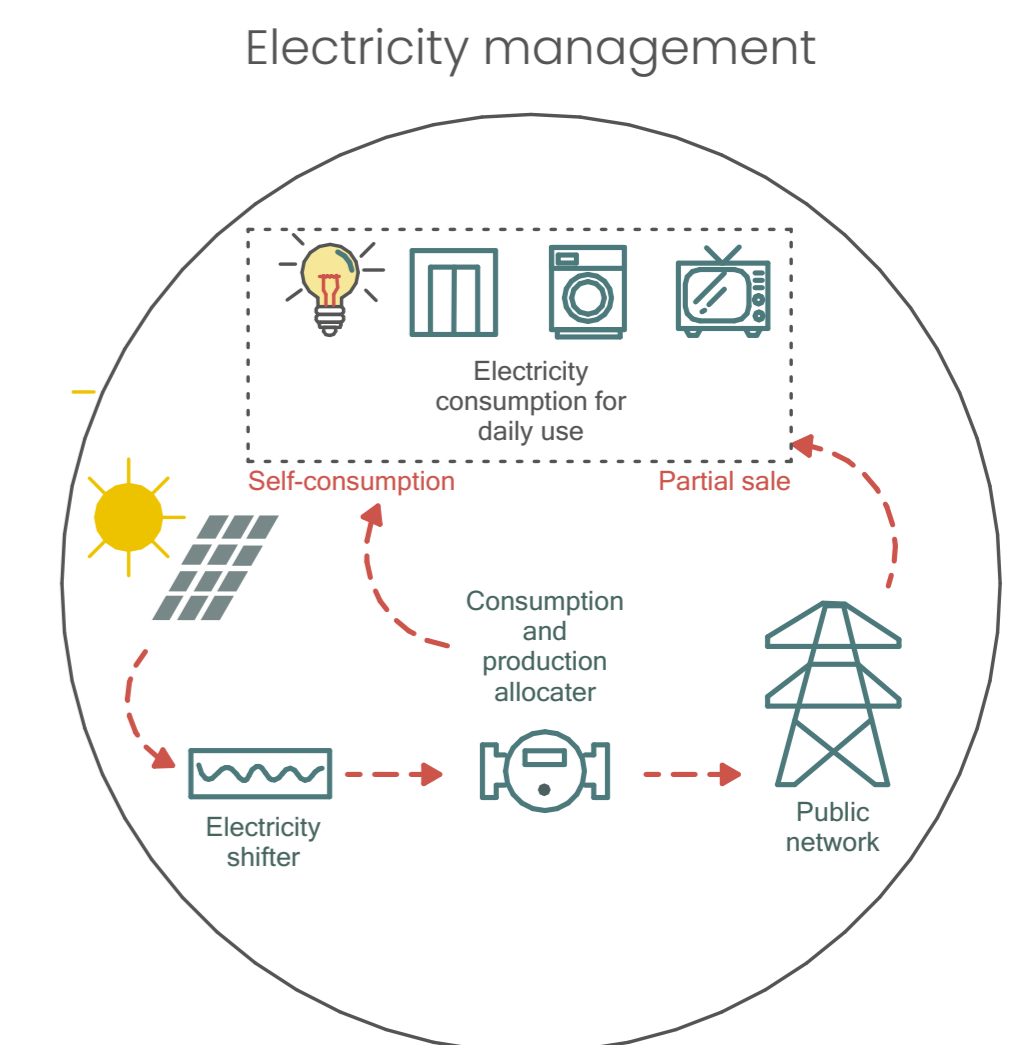
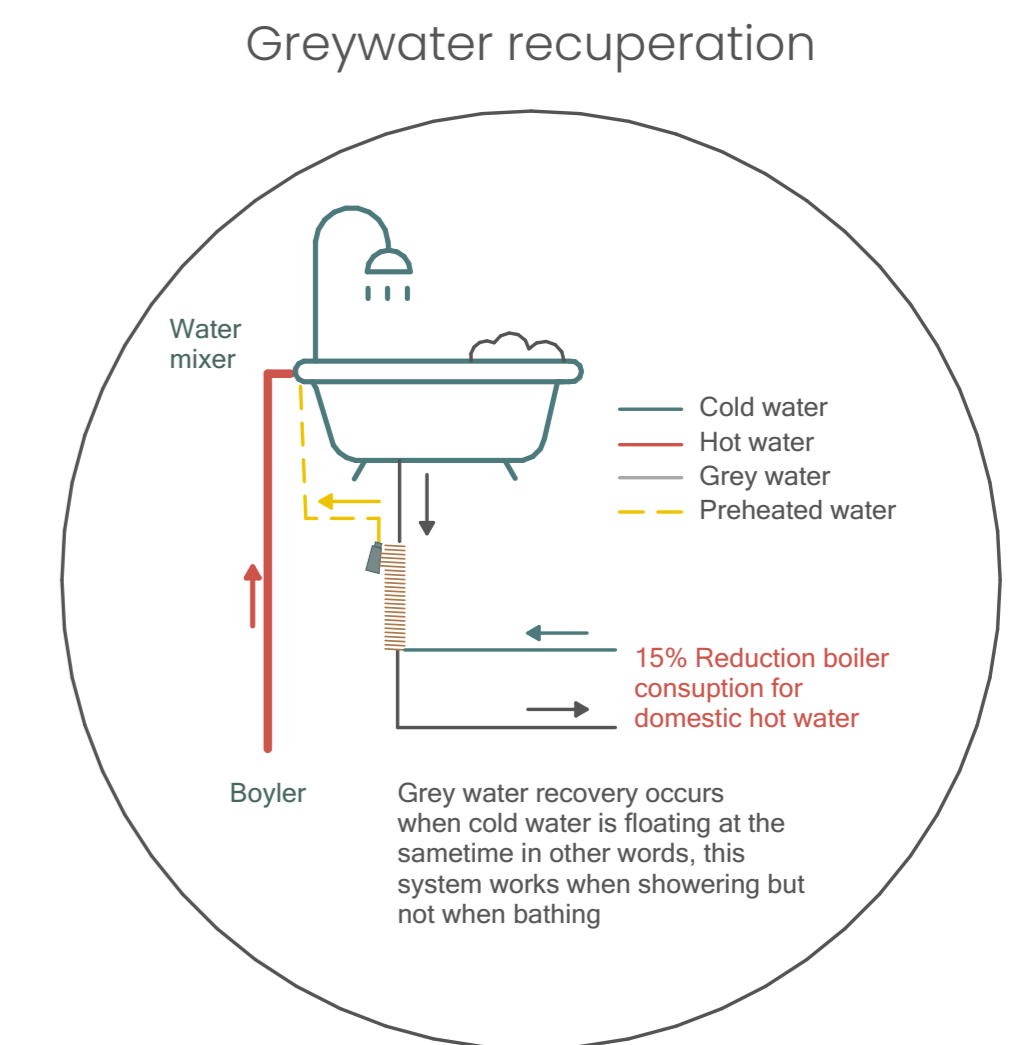
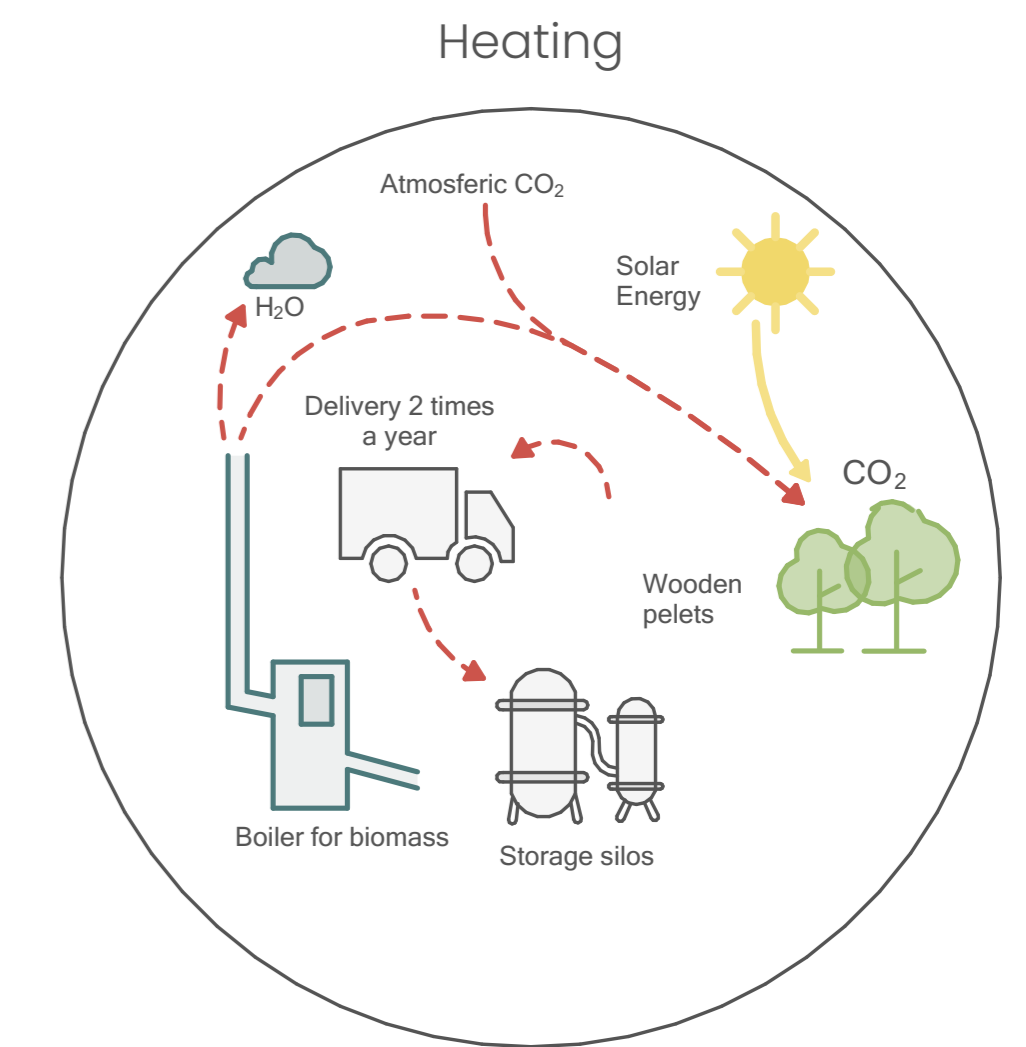
technology diagrams



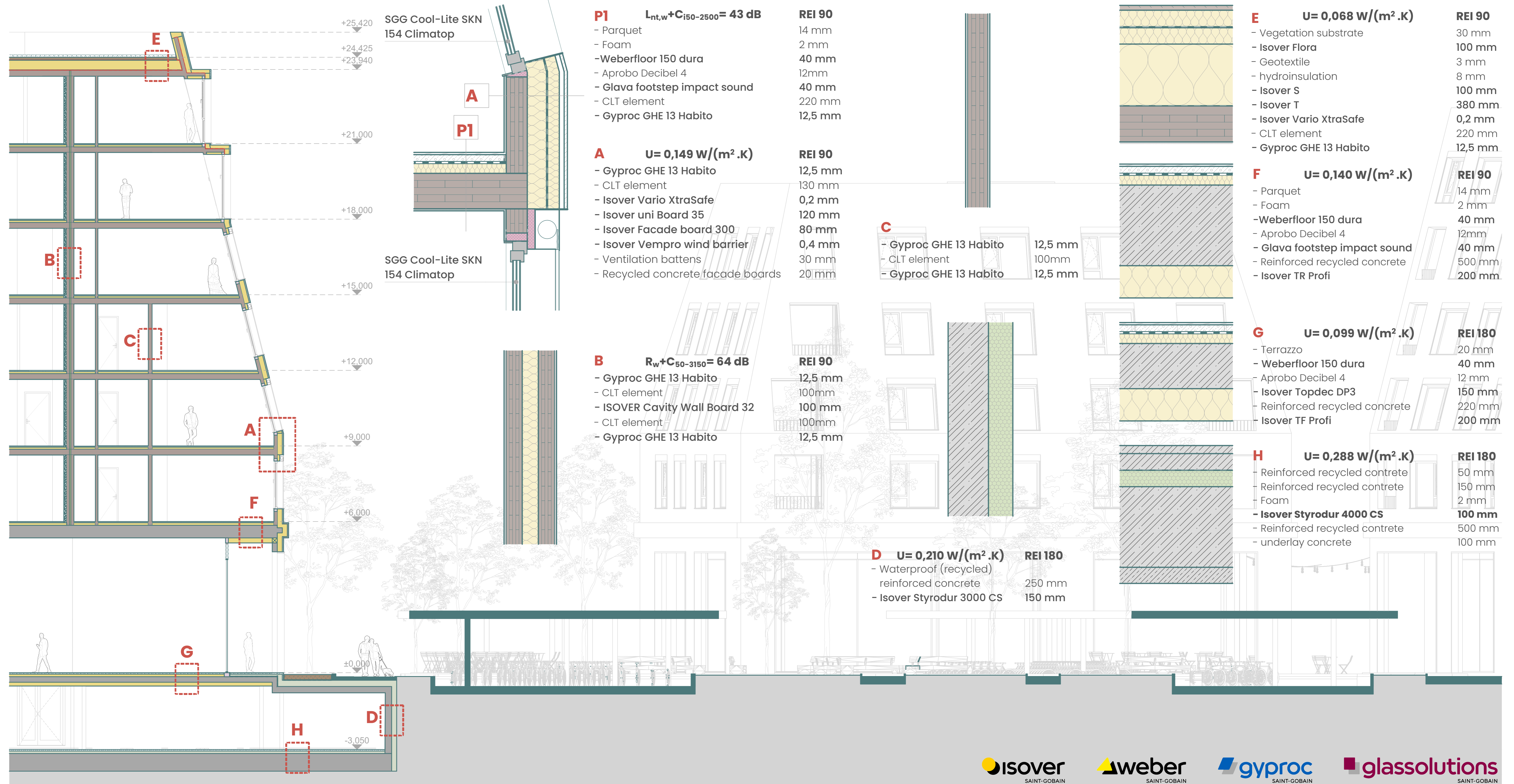
Heat management



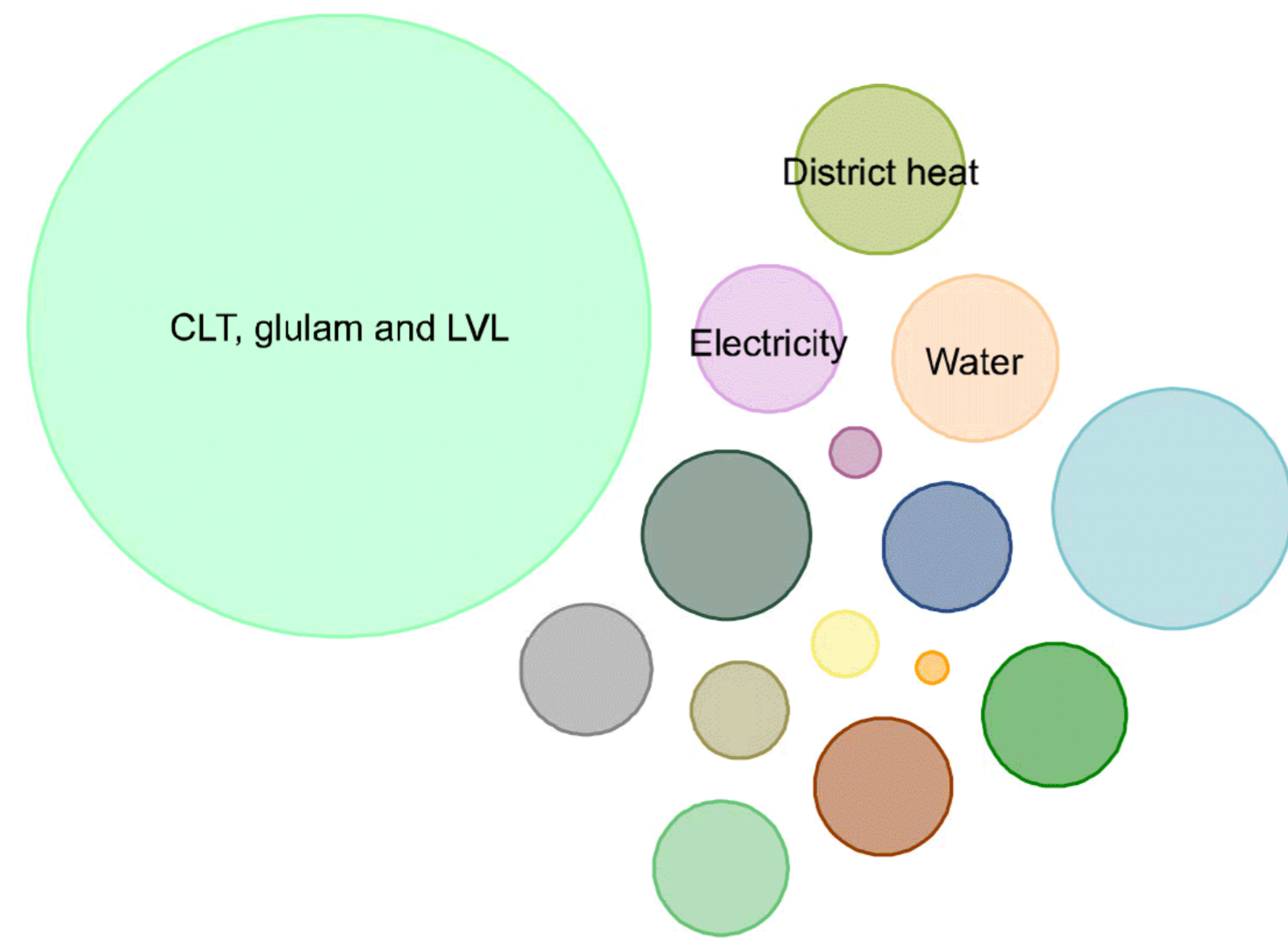
Rain water and solar management



construction systems

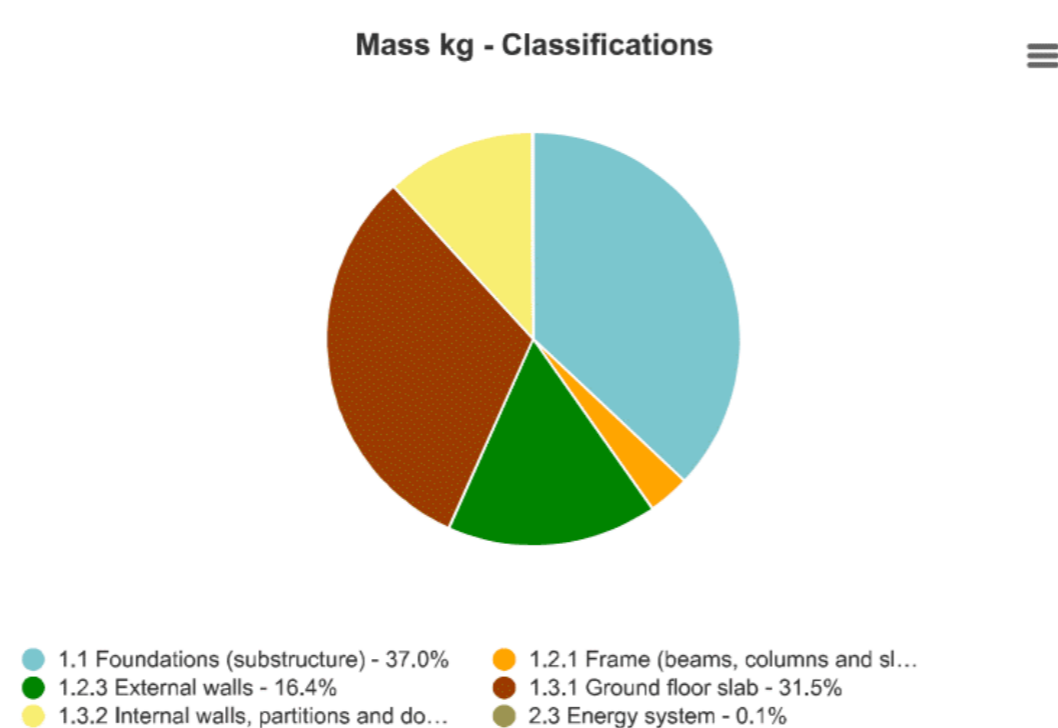
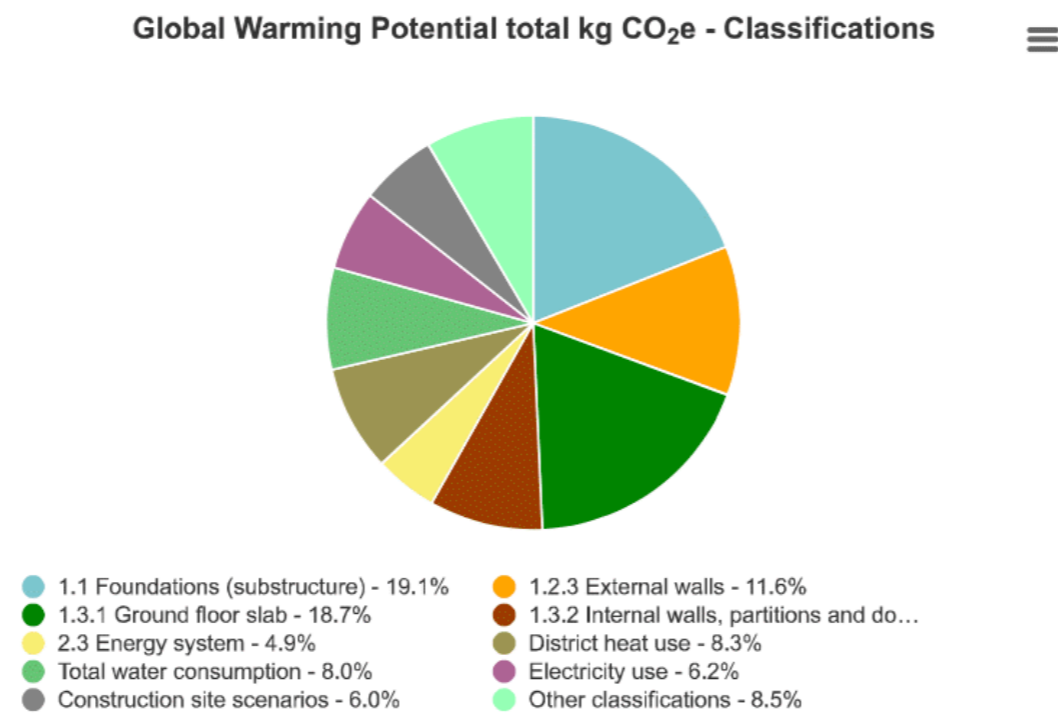
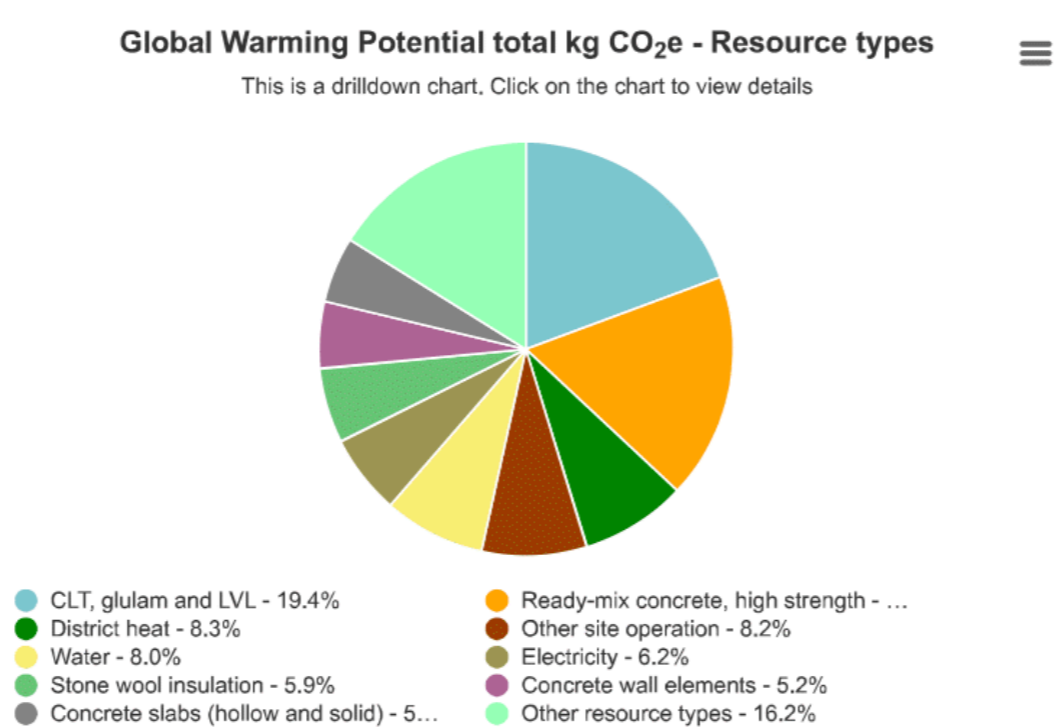
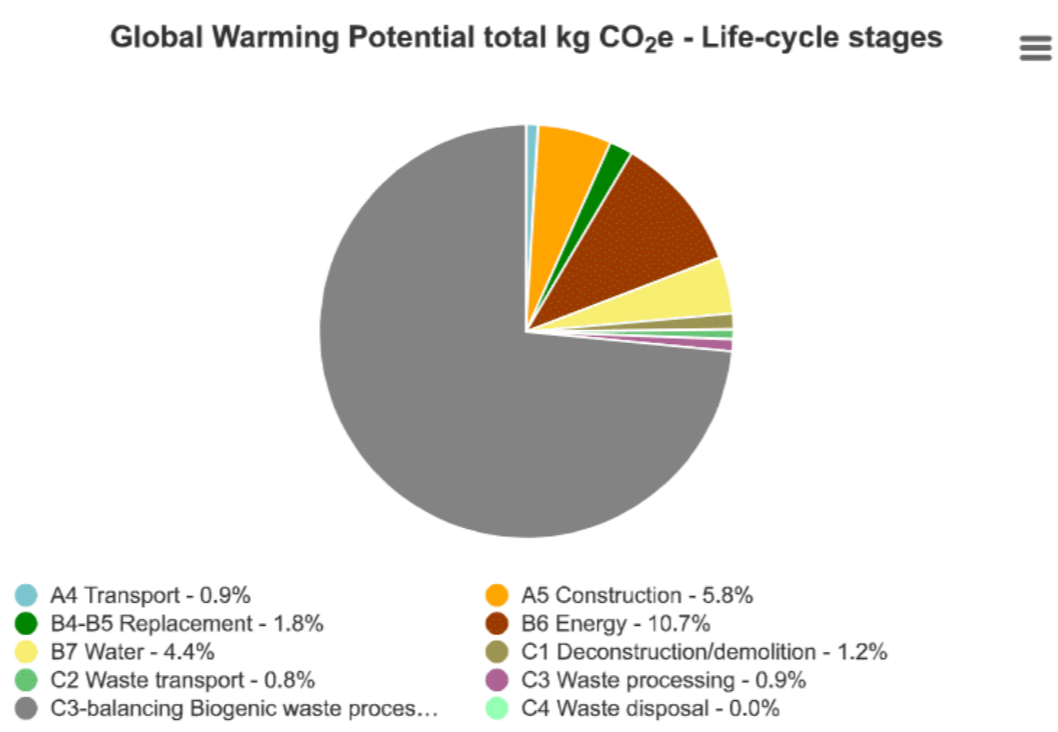


LCA & Save-E

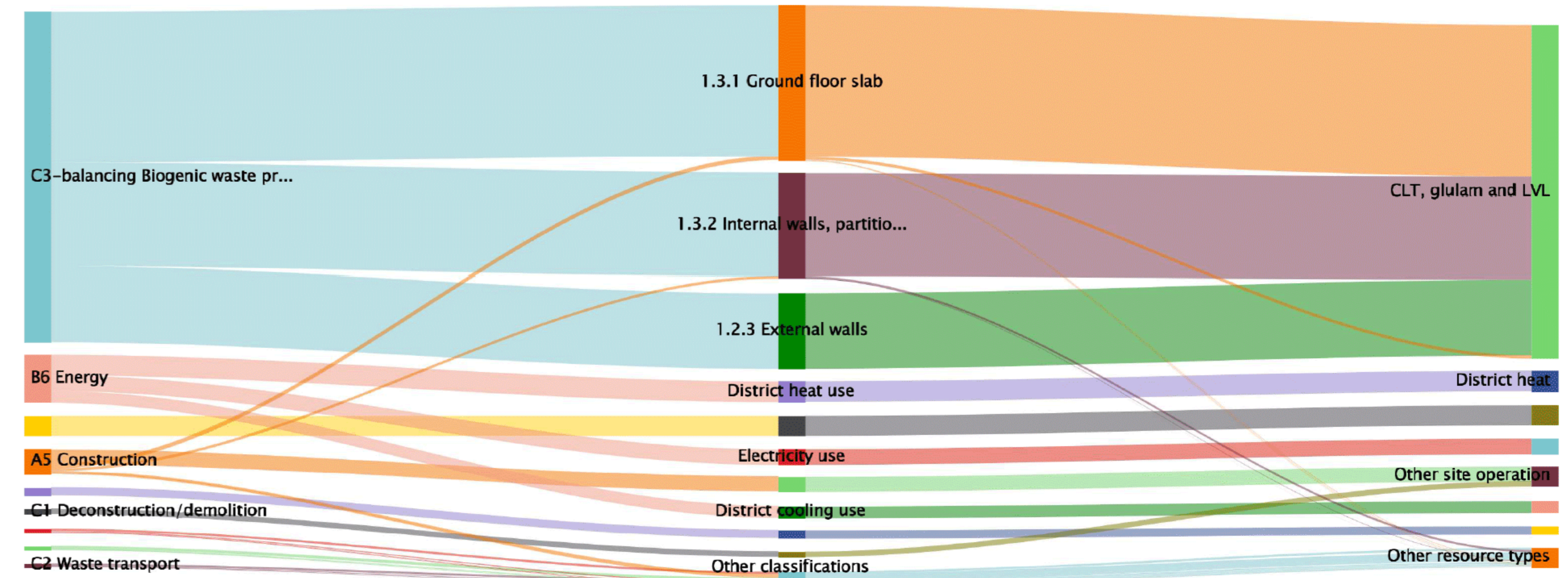


- XPS (extruded polystyrene) insulation
- Structural concrete (beams, columns, piling)
- Leveling screeds (for floors)
- Other site operation
- District cooling
- Ready-mix concrete, high strength
- Concrete wall elements
- Concrete slabs (hollow and solid)
- CLT, glulam and LVL
- District heat
- Stone wool insulation
- Regular gypsum board
- Energy production systems from renewable energy
- Electricity
- Water

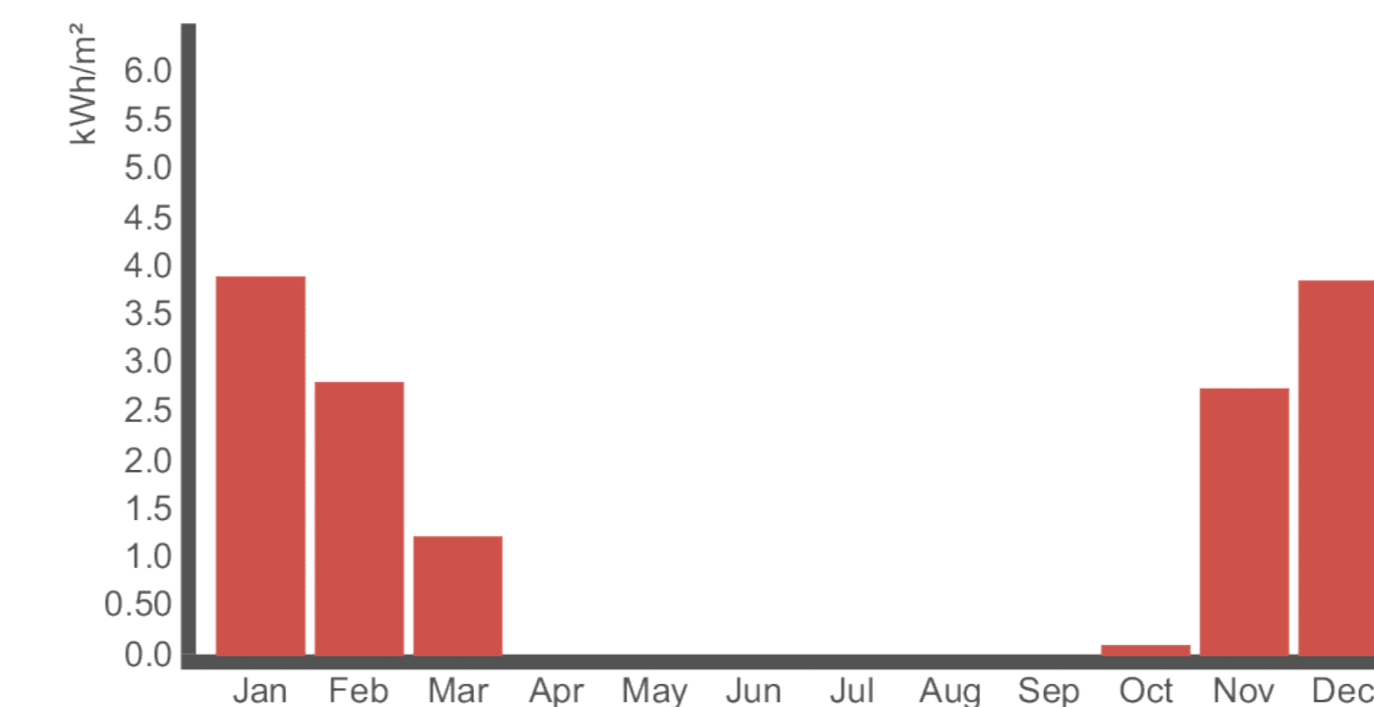
Cradle to grave (A1-A4, B4-B5, C1-C4)	kg CO ₂ e/m ²
(< 320) A	185
(320-360) B	
(360-400) C	
(400-440) D	
(440-480) E	
(480-520) F	
(> 520) G	



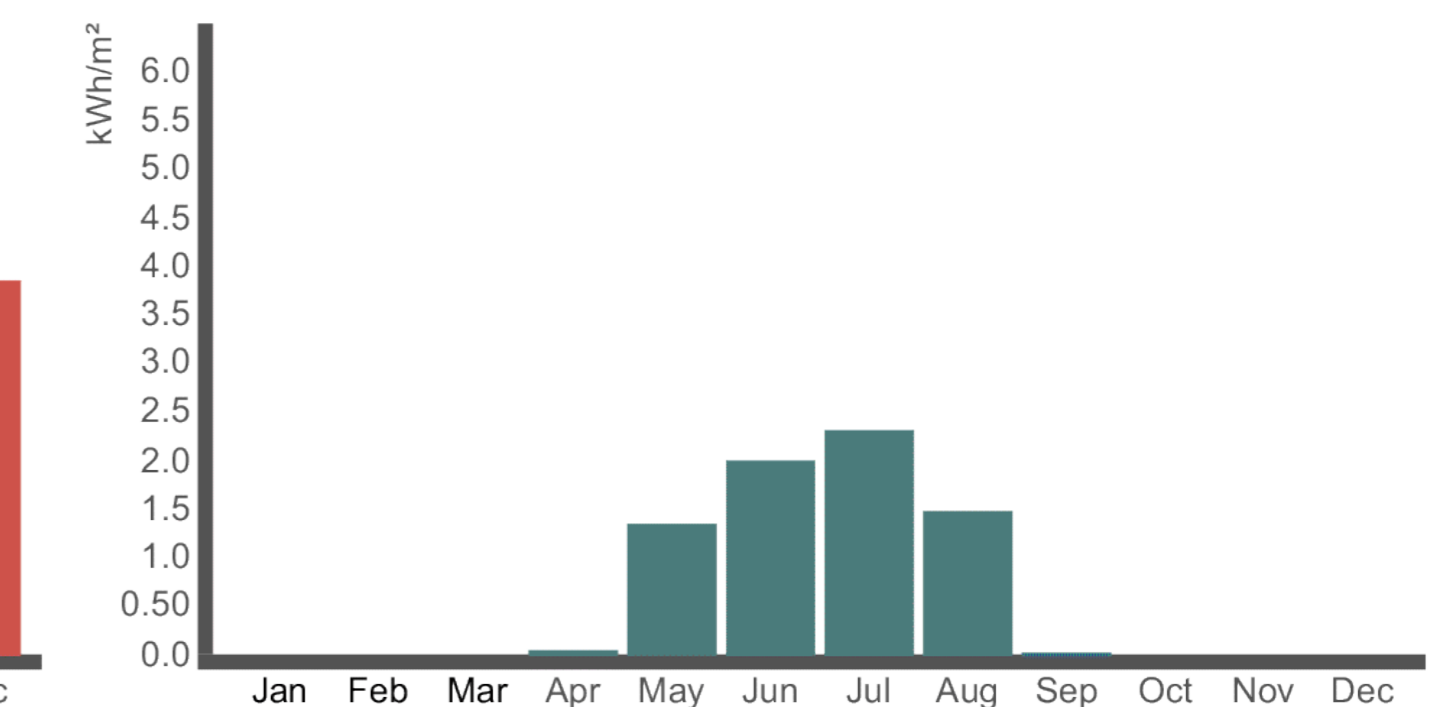
Sankey diagram, Global Warming Potential total



Heating needs



Cooling needs



Heating needs (kWh/m²)

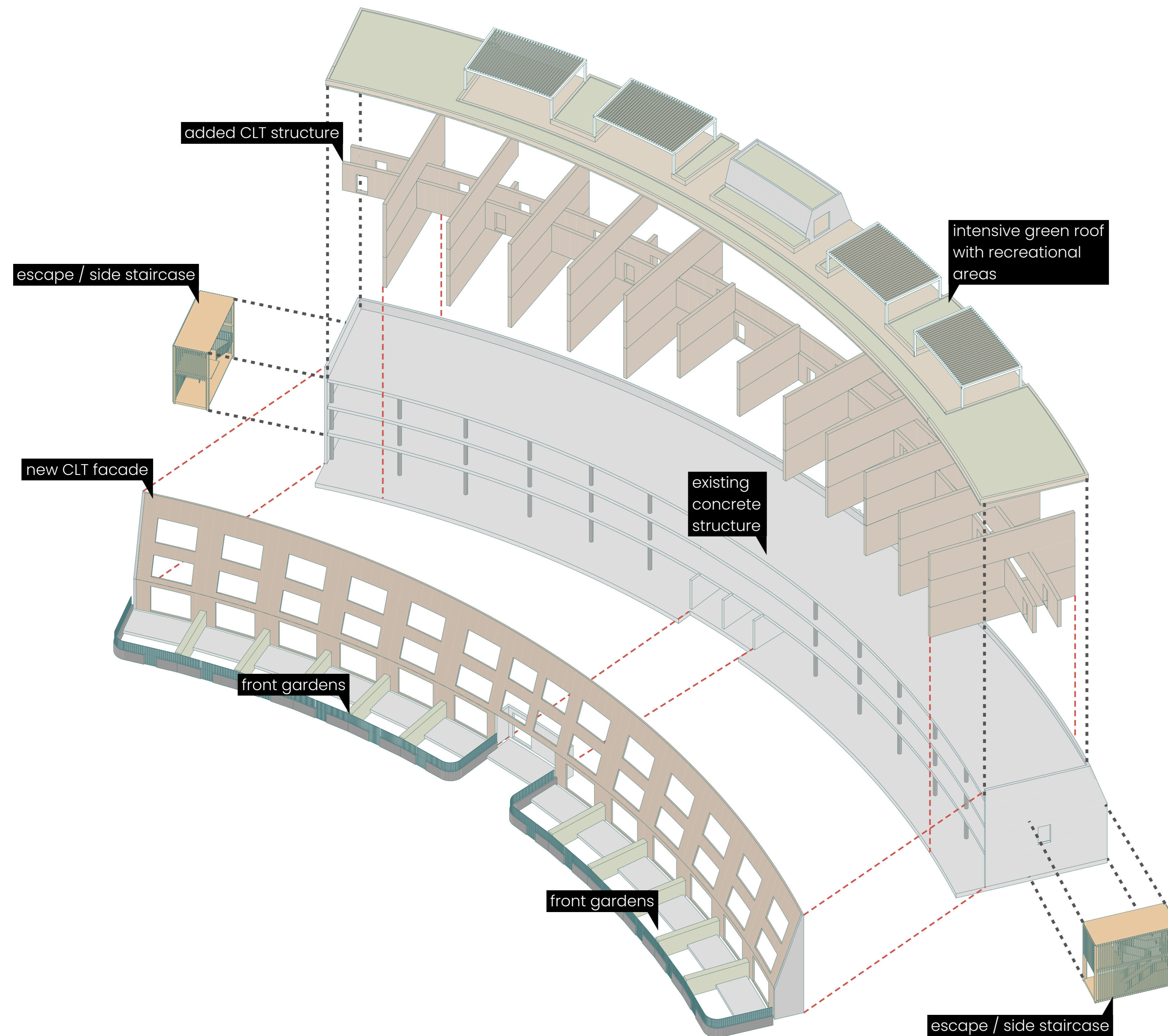
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Heating	3,94	2,86	1,23	—	—	—	—	—	—	0,02	2,71	3,87	14,63
Total	3,94	2,86	1,23	—	—	—	—	—	—	0,02	2,71	3,87	14,63

Cooling needs (kWh/m²)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Cooling	—	—	—	0,03	1,34	1,98	2,29	1,46	0,01	—	—	—	7,11
Total	—	—	—	0,03	1,34	1,98	2,29	1,46	0,01	—	—	—	7,11

Building A

concept diagram



During the design process of office **building A**, my aim was to integrate it seamlessly with the proposed development. As a result, a 15° pitched roof was added to both sides to ensure the building's appearance matched that of the new development. To achieve this, the original **building was stripped down to its supporting skeleton.**

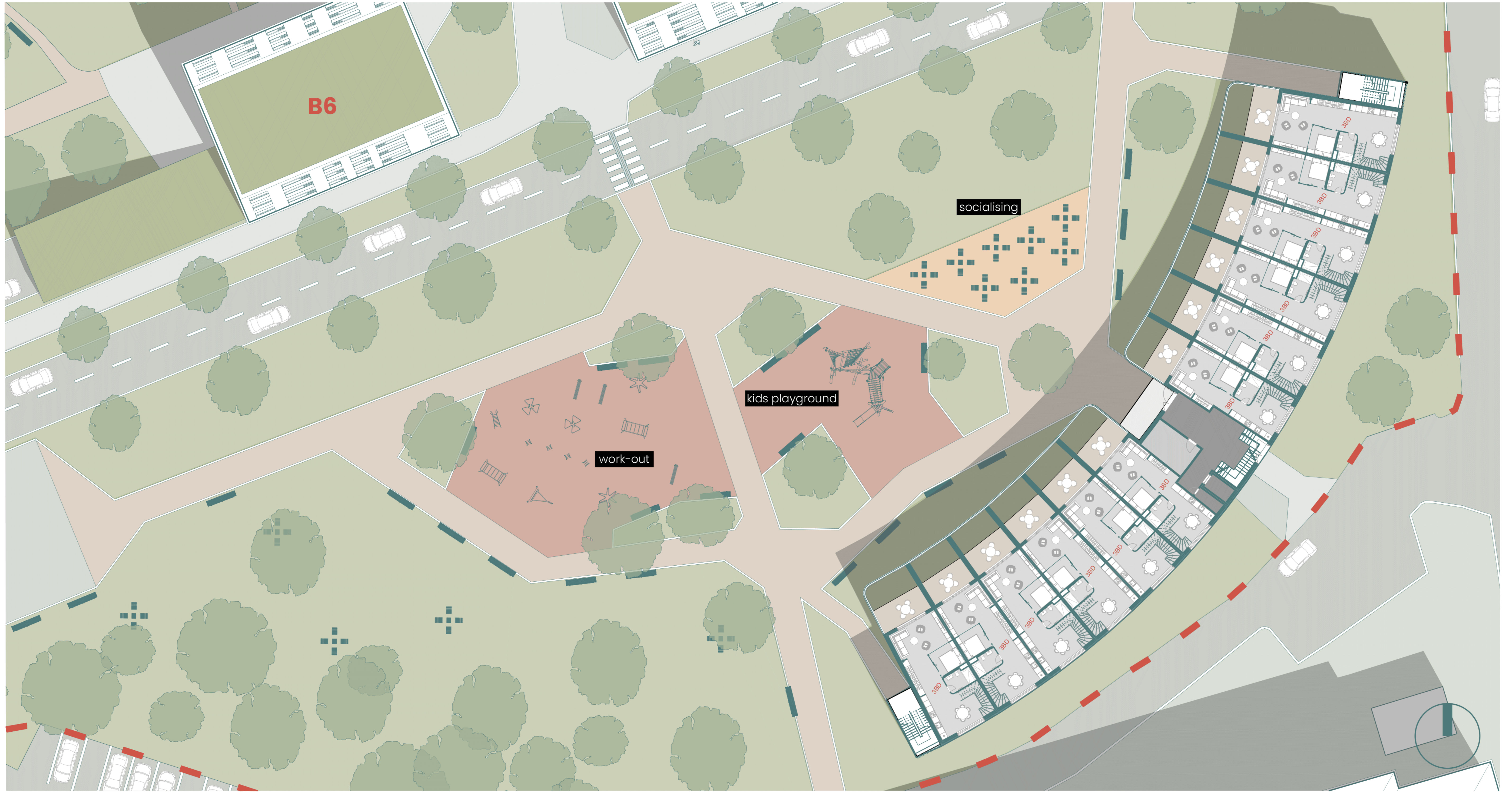
All of the building debris was recycled and used in the new structure. For instance, the concrete and brick elements were repurposed as fillers in new concrete structures.

On the inside, the building features a horizontal communication on the second floor, from which you can access two-storey apartments located on both sides. To reduce the carbon footprint of the building, all of the added elements are designed as **CLT wooden structures.**

The lower-floor flats have front gardens, while the upper-floor flats have loggias. A residential green roof was also added to the top of the building.

The entire building is **insulated with Saint-Gobain thermal and acoustic insulation** to meet the highest living standards.

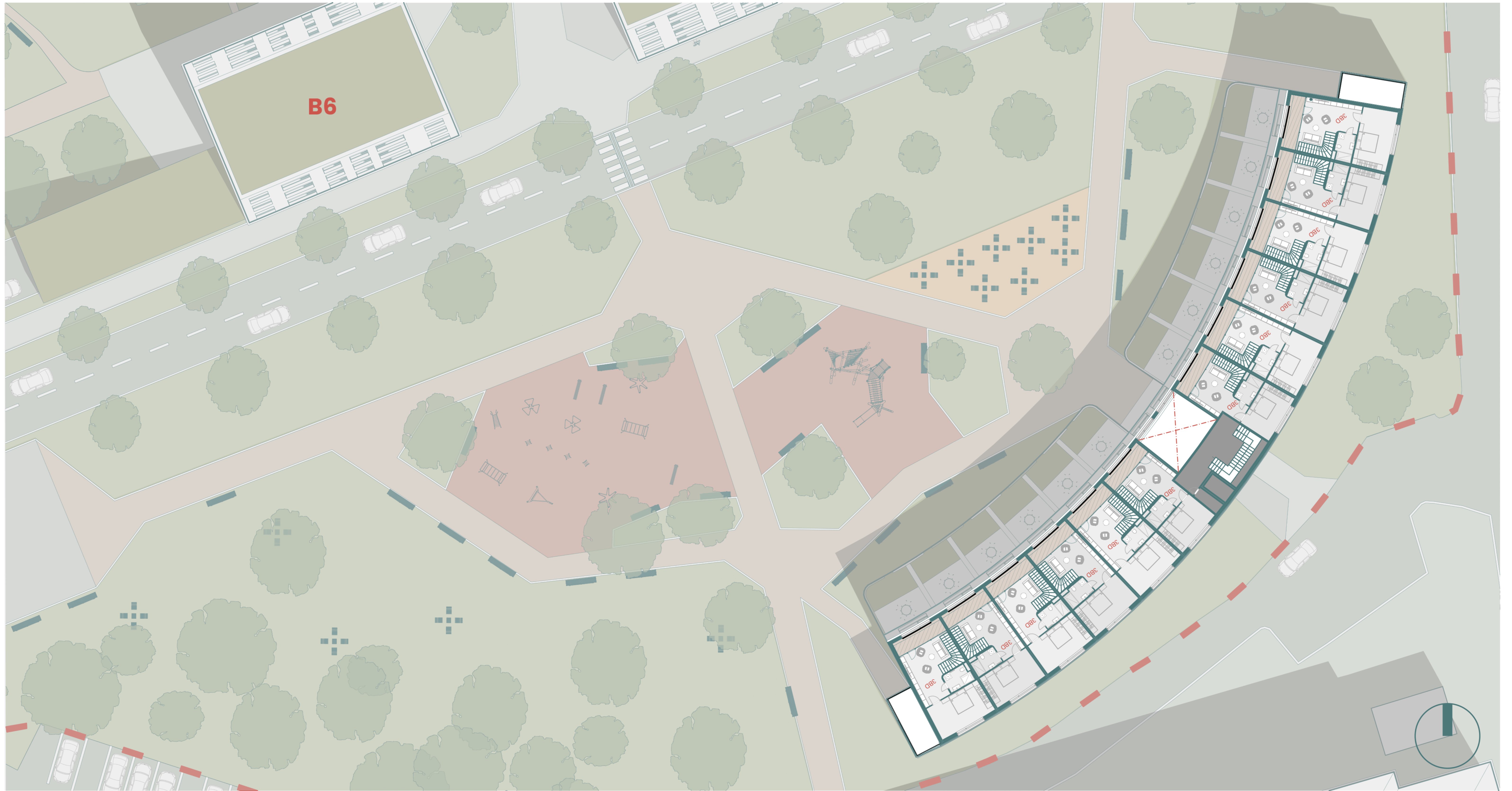
1st. floor



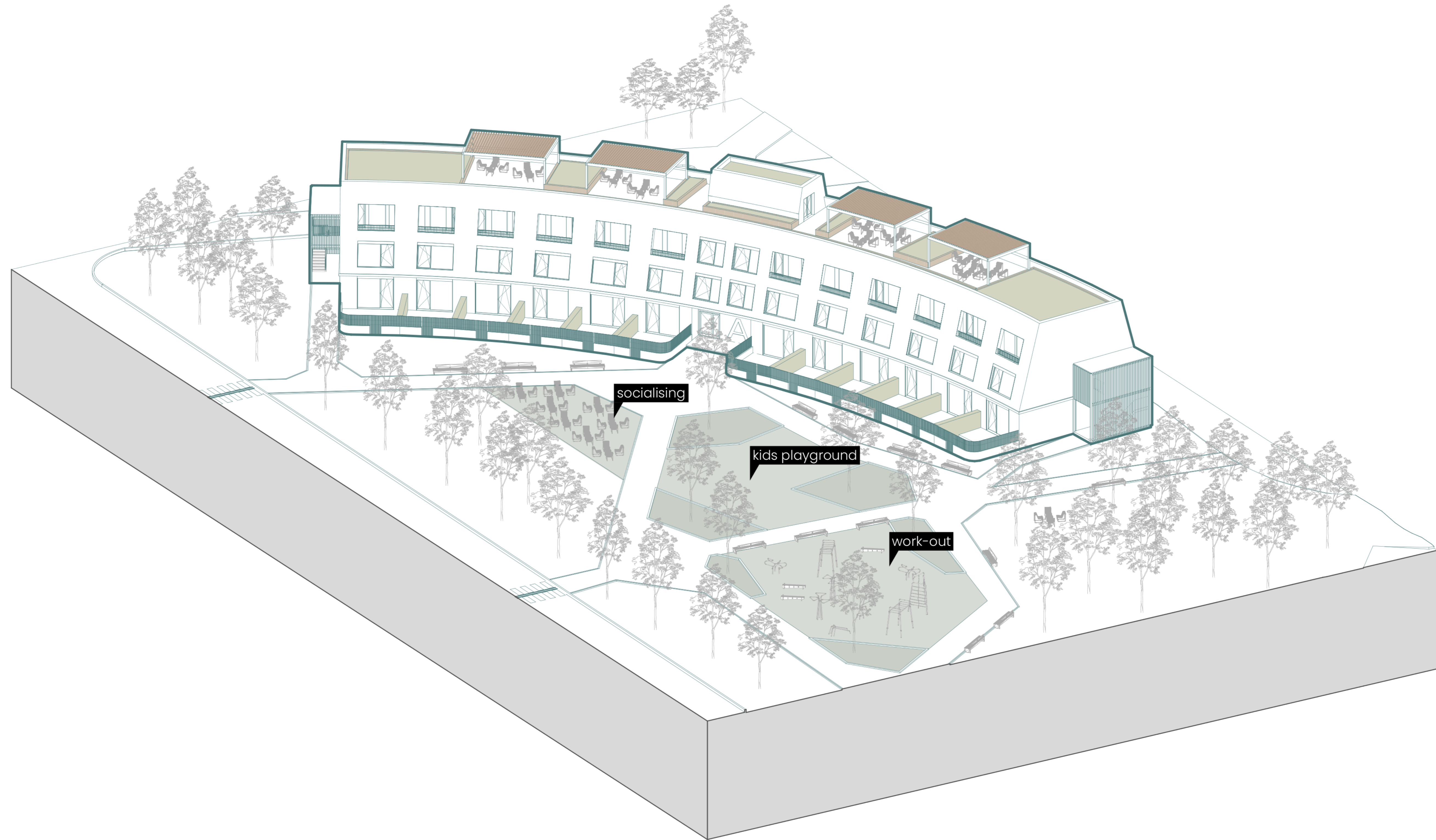
2nd. floor



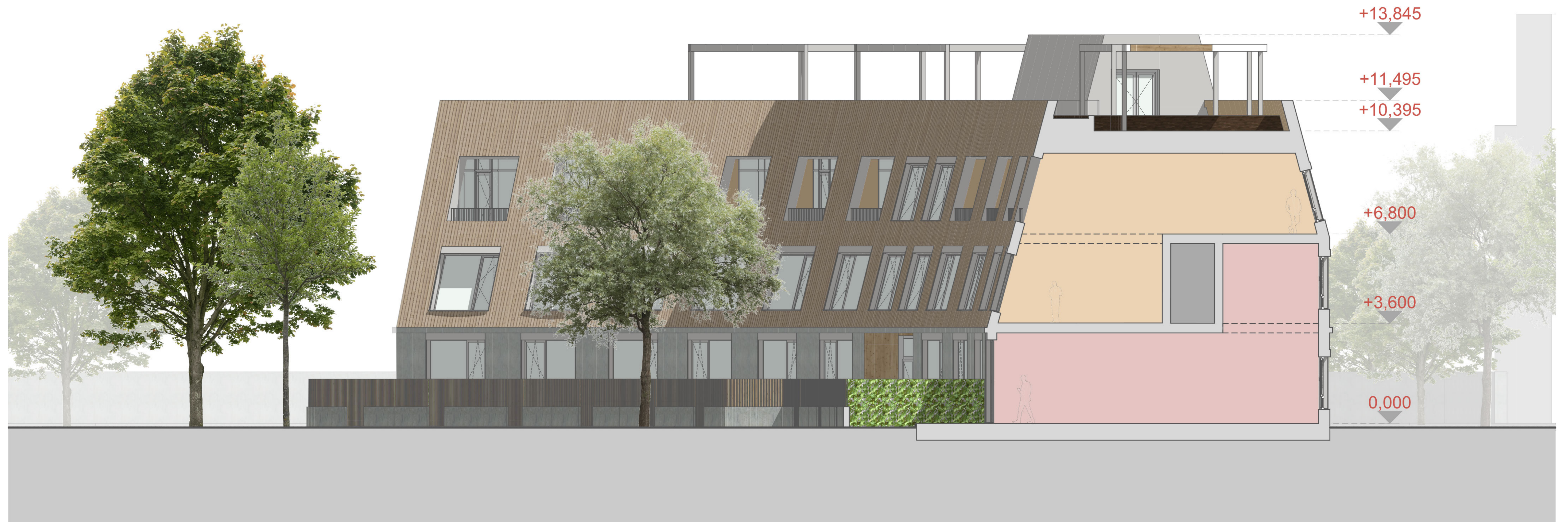
3rd. floor




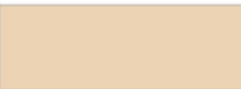

axonometry



section diagram

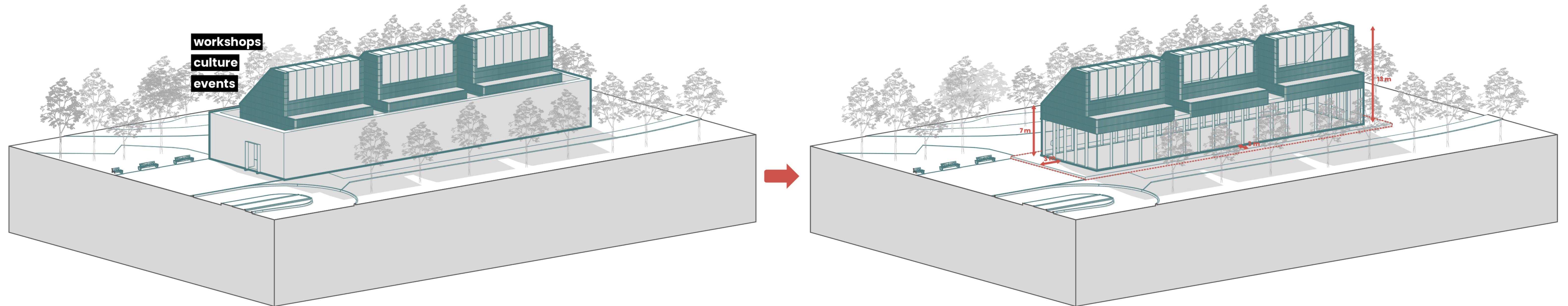


Building A features vertical communication from the 1st floor up to the roof level. In addition, there is **a single horizontal communication** located on the 2nd floor. This design allows for the maximum use of living space and greatly improves the economics of the building. Both types of apartments available in the building are **3-bedroom**, two-story units that offer views on both main sides of the building.

-  3-BD with front garden
-  3BD with loggia
-  horizontal communication



**MULTIFUNCTIONAL
CENTER**



The former museum building has been reconstructed with a **non-invasive design**. The main objective of the reconstruction was to create a grand building that connects history with the present while acting as an interface between the surrounding nature and the designed area. **The new structure is built-in** and set back from the perimeter walls by 2 to 3 meters. It is entirely glazed, allowing visitors to experience the genius loci of the space, while providing all-day lighting through high north-facing skylights. The redesigned space serves multiple purposes, such as **events, workshops, exhibitions,** and so on.

