



THE GREEN FINGERS



Team Egypt

AAST – Sheraton Branch

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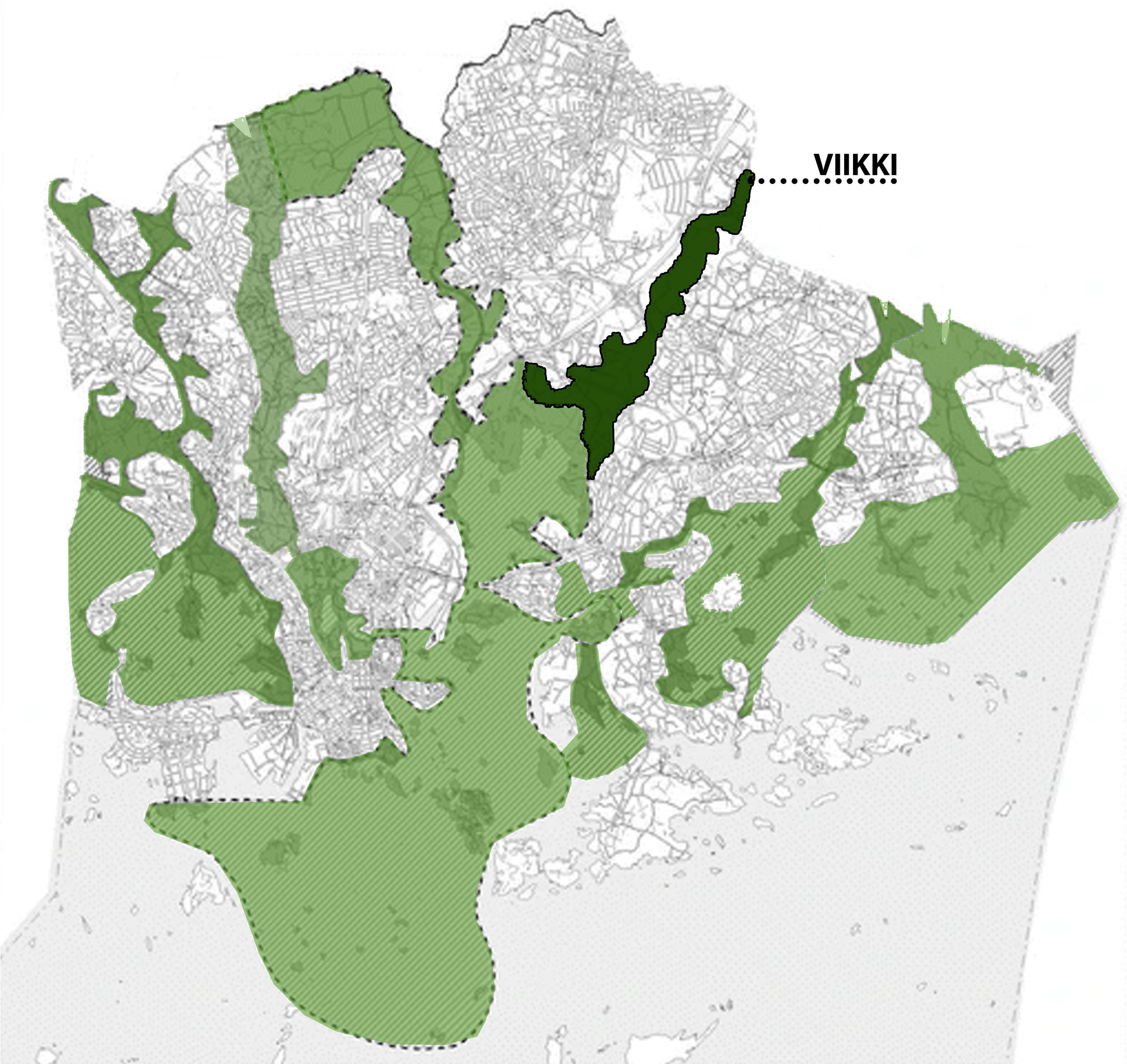
Team No. 21101
Presentation No. 26



LOCATION



CONCEPT



Inspired from Helsinki's Green Fingers

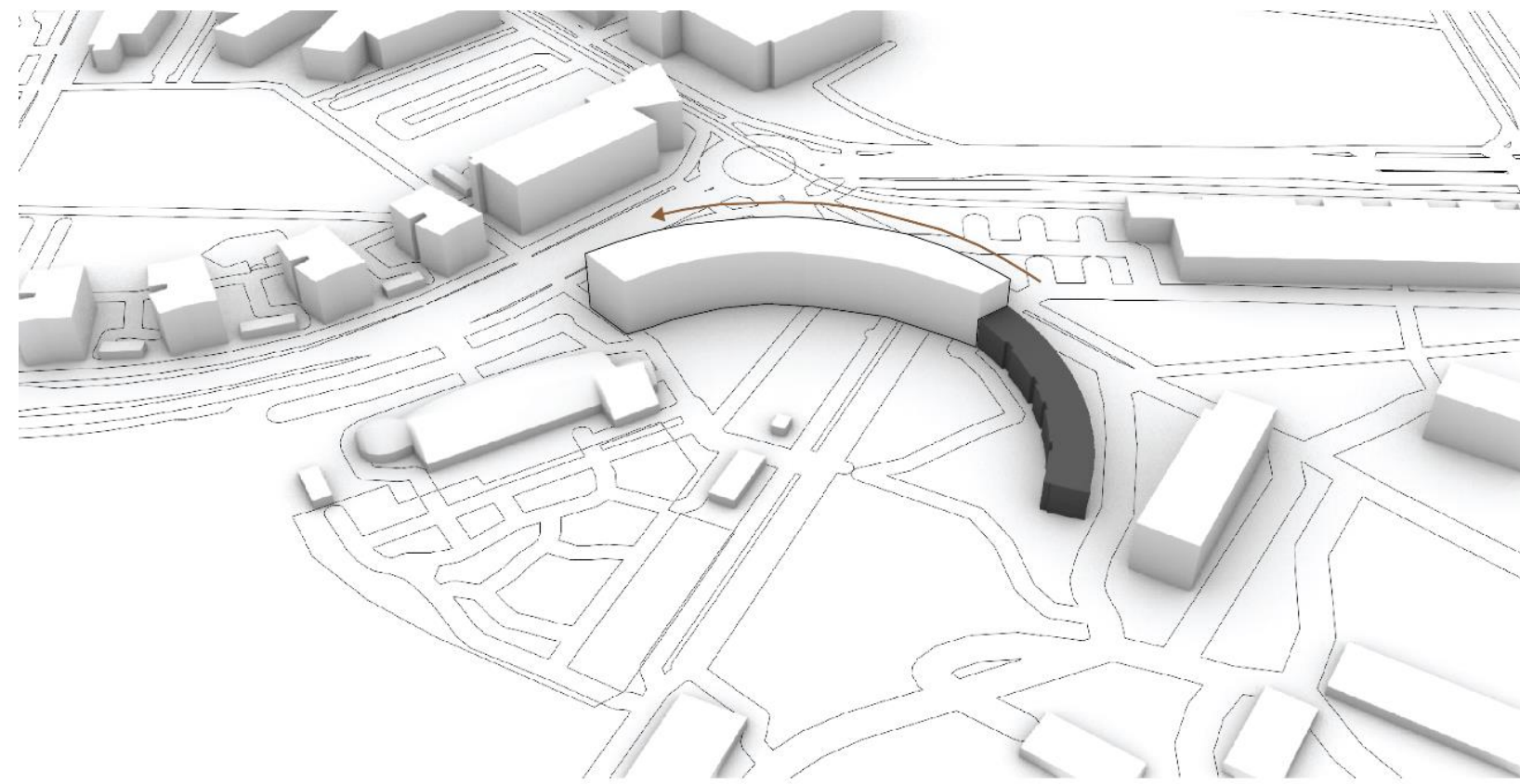
CONCEPT STATEMENT

The building aims to establish an inclusive community within Helsinki by strategically integrating green spaces throughout the building, cultivating communal areas that seamlessly blend with the natural surroundings.

RELATION TO ARBORETUM

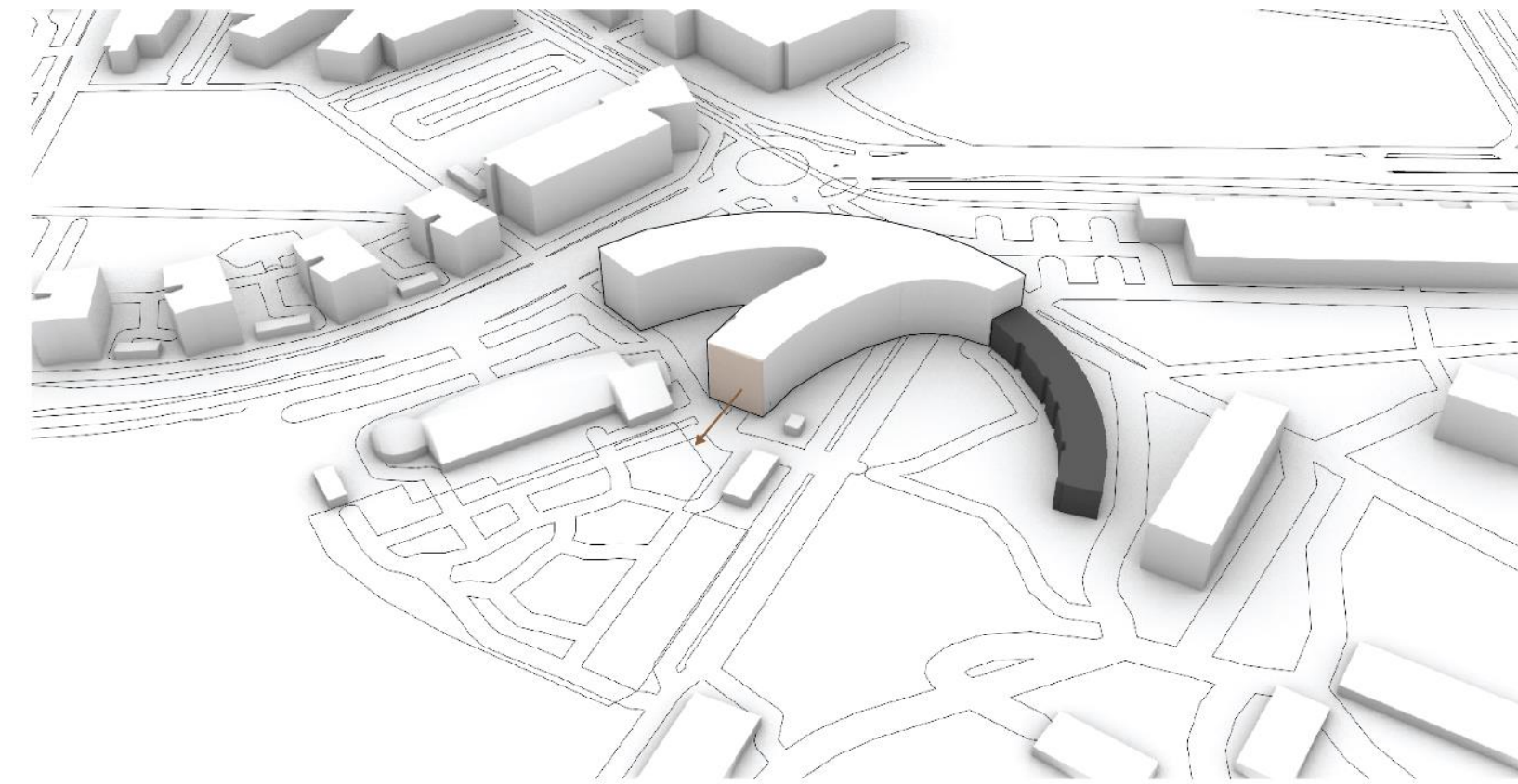


FORM GENERATION



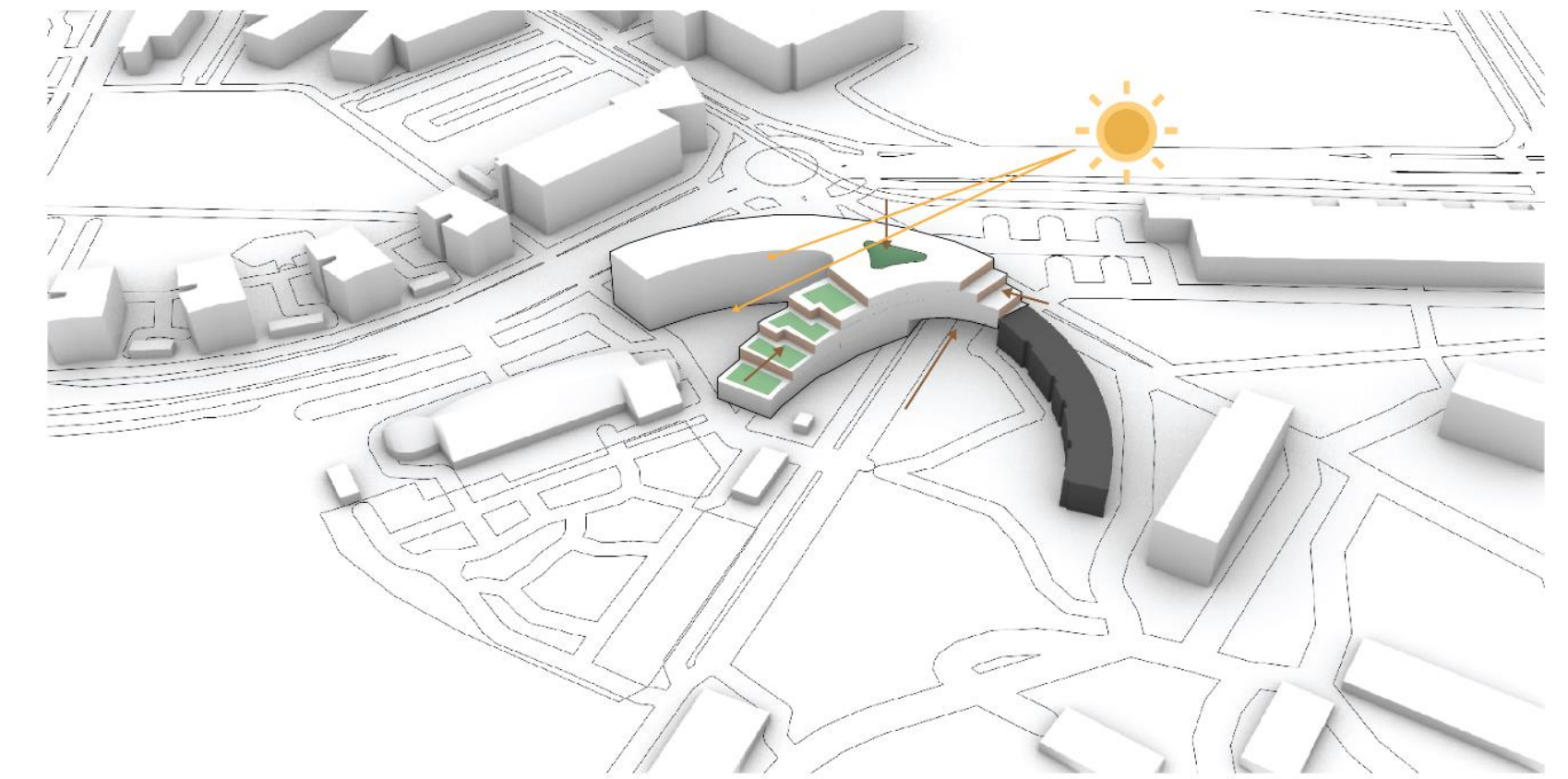
CONTINUATION OF OLD BUILDING FORM

Extension of the existing form of the old building with a physical connection between them increases the harmony of the overall project on site



EXTRUSION OF AN EXTRA FINGER

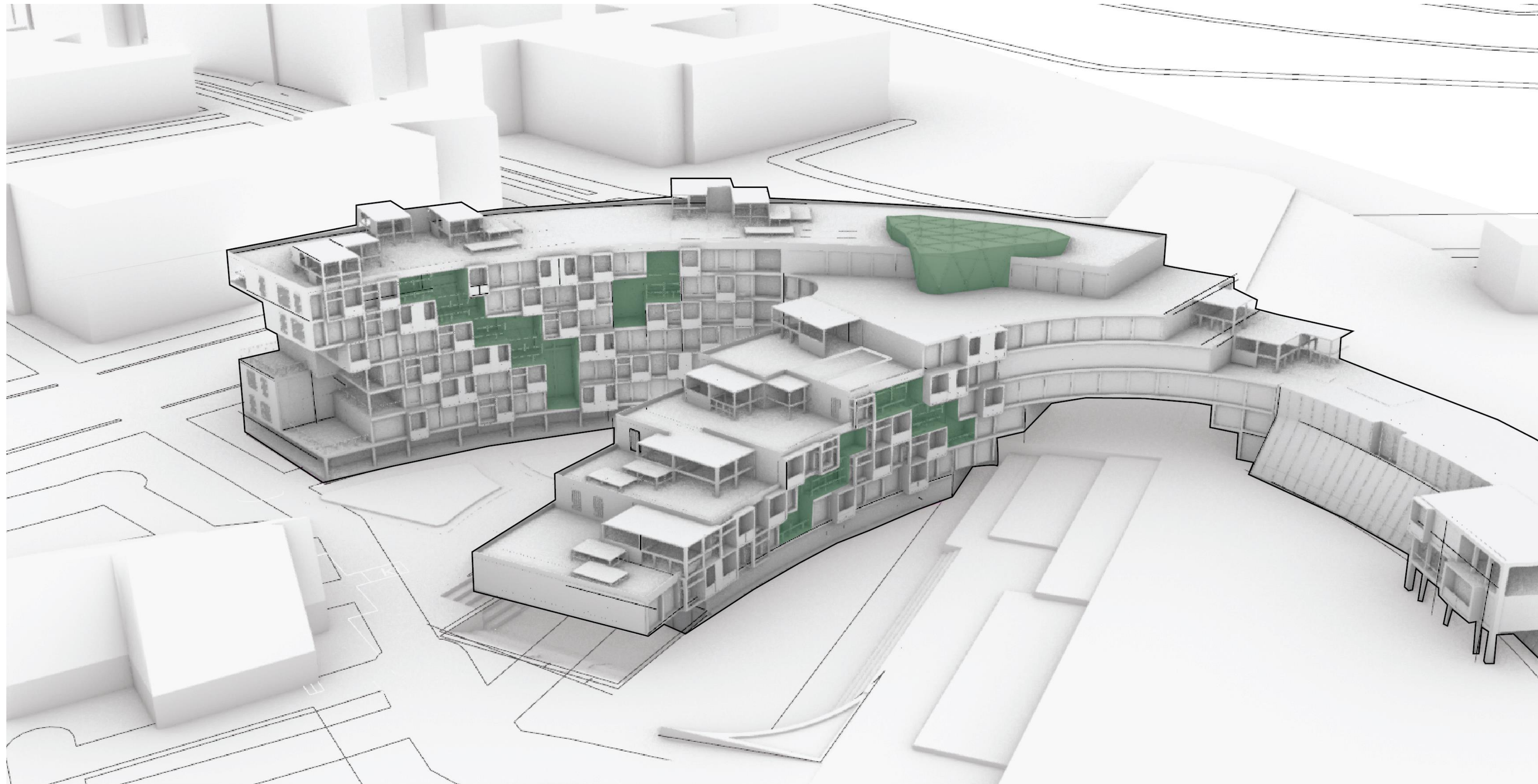
Extra mass is added to increase rooms toward south to increase sunlight intake as much as possible



RECESSES TO THE NEW MASSES ARE DONE TO MAXIMIZE SUNLIGHT INTAKE FOR BOTH RESIDENTIAL FINGERS AND MAKE WAY FOR PEDESTRIAN PATHWAY

The connection between the old and new building is elevated to make way for the street beneath it, which will be transformed to a pedestrian-only walkway. The recesses in the old fingers are done to not block winter sun from penetrating the first residential finger

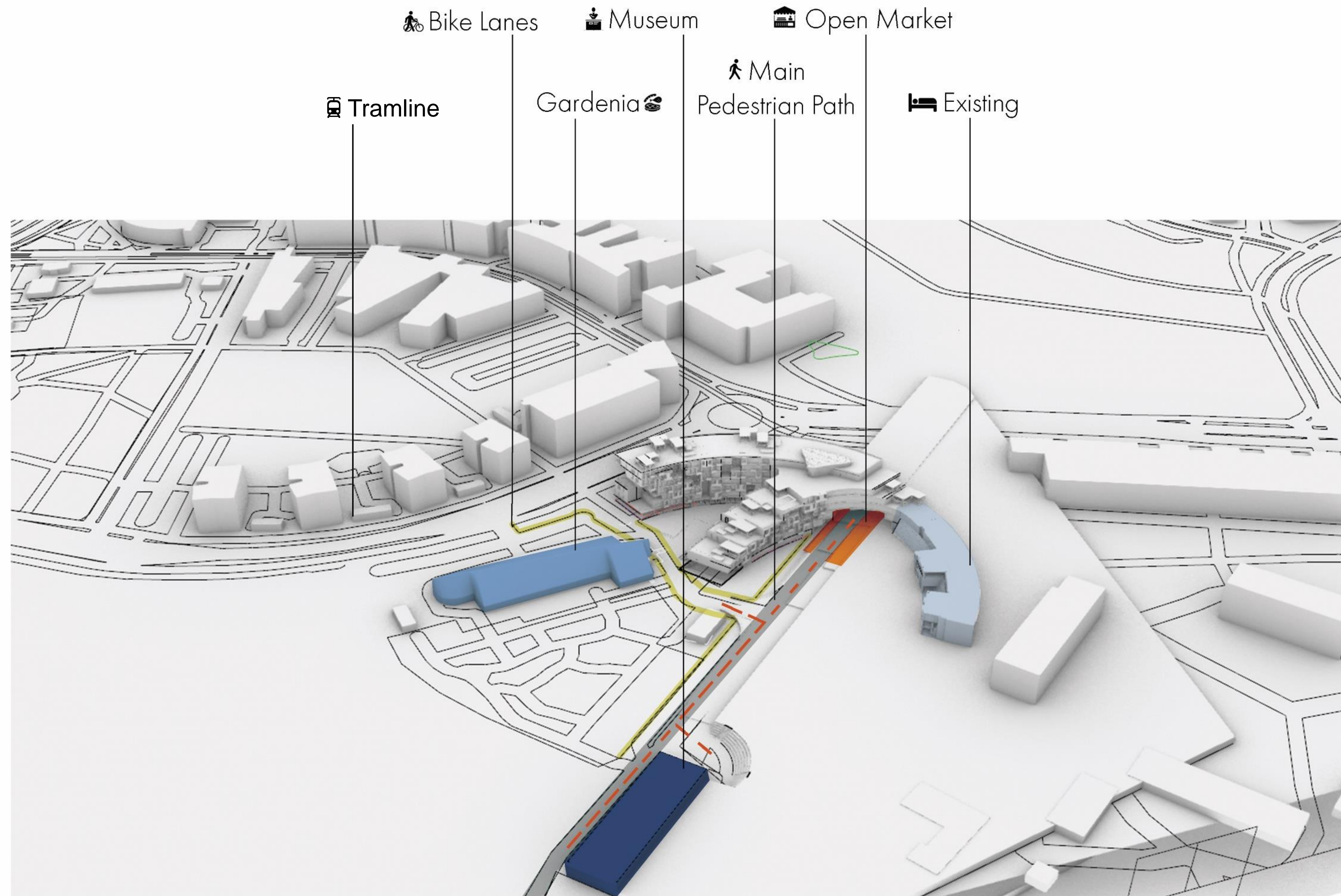
FORM CONCEPT



GREEN FINGERS CREATING SPACES

Green fingers will be used to create different functional spaces in our project whether internally or externally, all while increasing green roofs and facades at the same time

CONNECTIVITY



Enhancing the experience for the residents by creating an inside community that allows them to interact with the outsiders through the open market and bike lanes, connecting the existing build with the new and both of them overlook the museum making them as an entity.

EXISTING BUILDING



MASTER PLAN LAYOUT



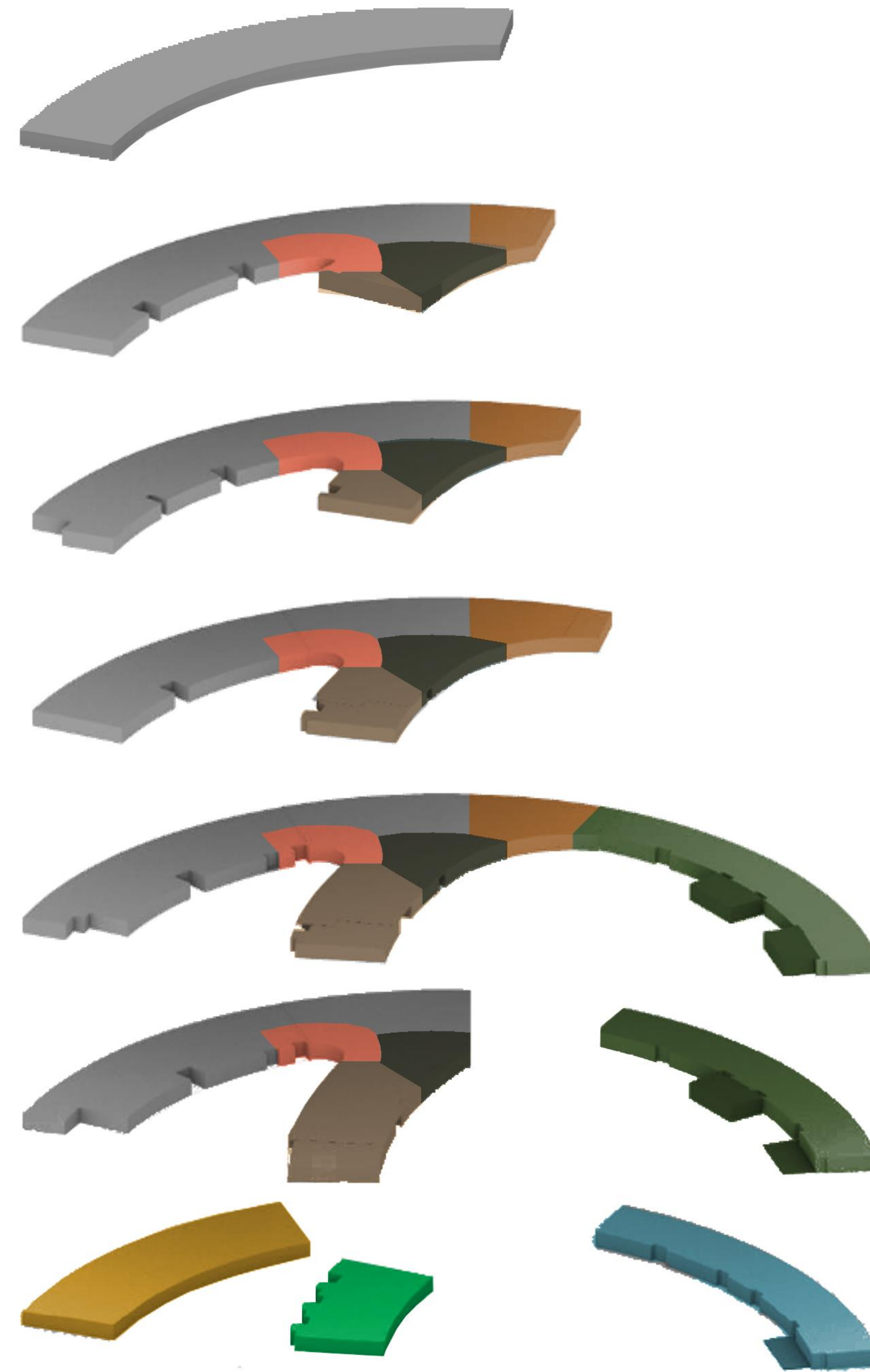
SCALE 1:500

MUSEUM'S AMPHITHEATER



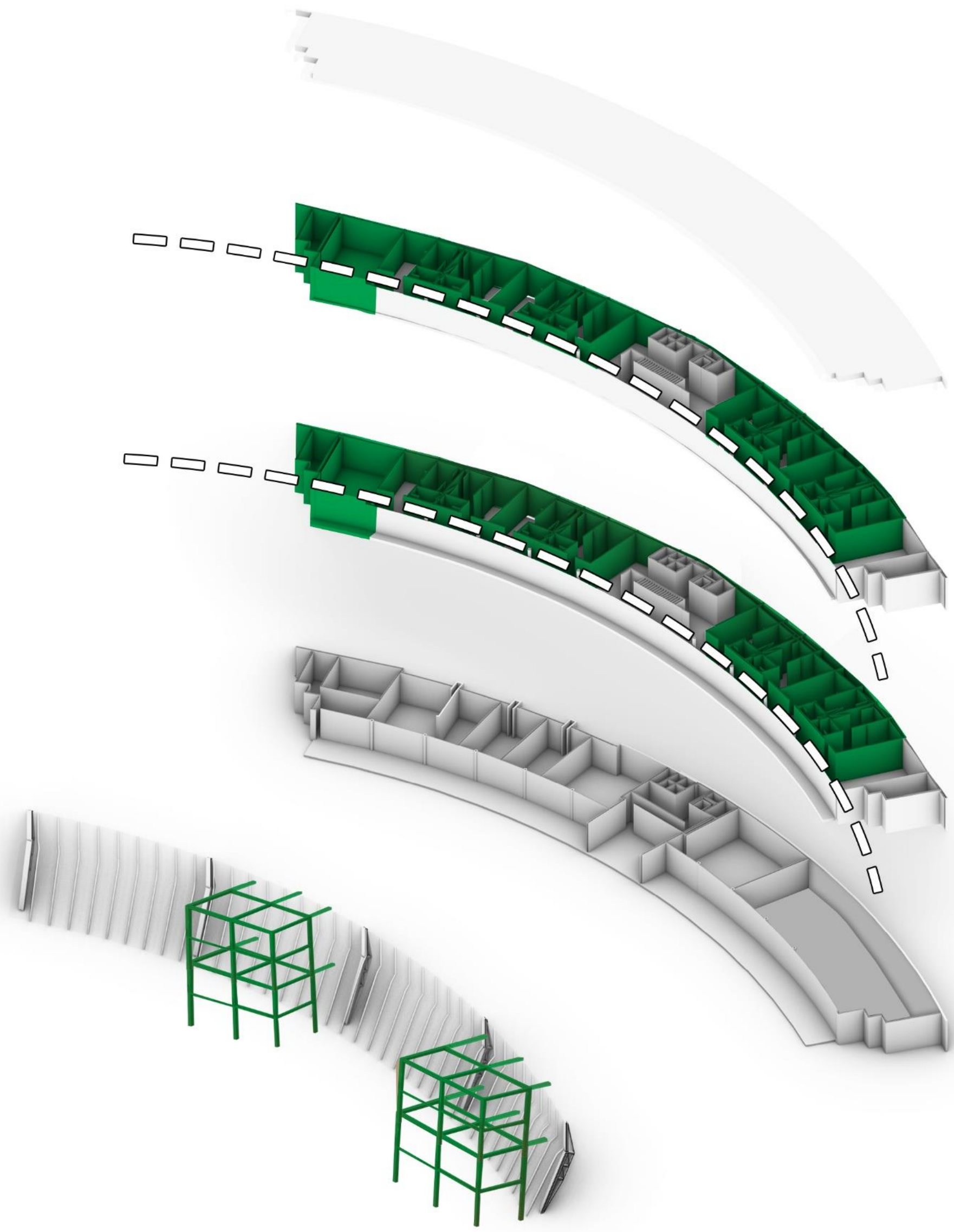
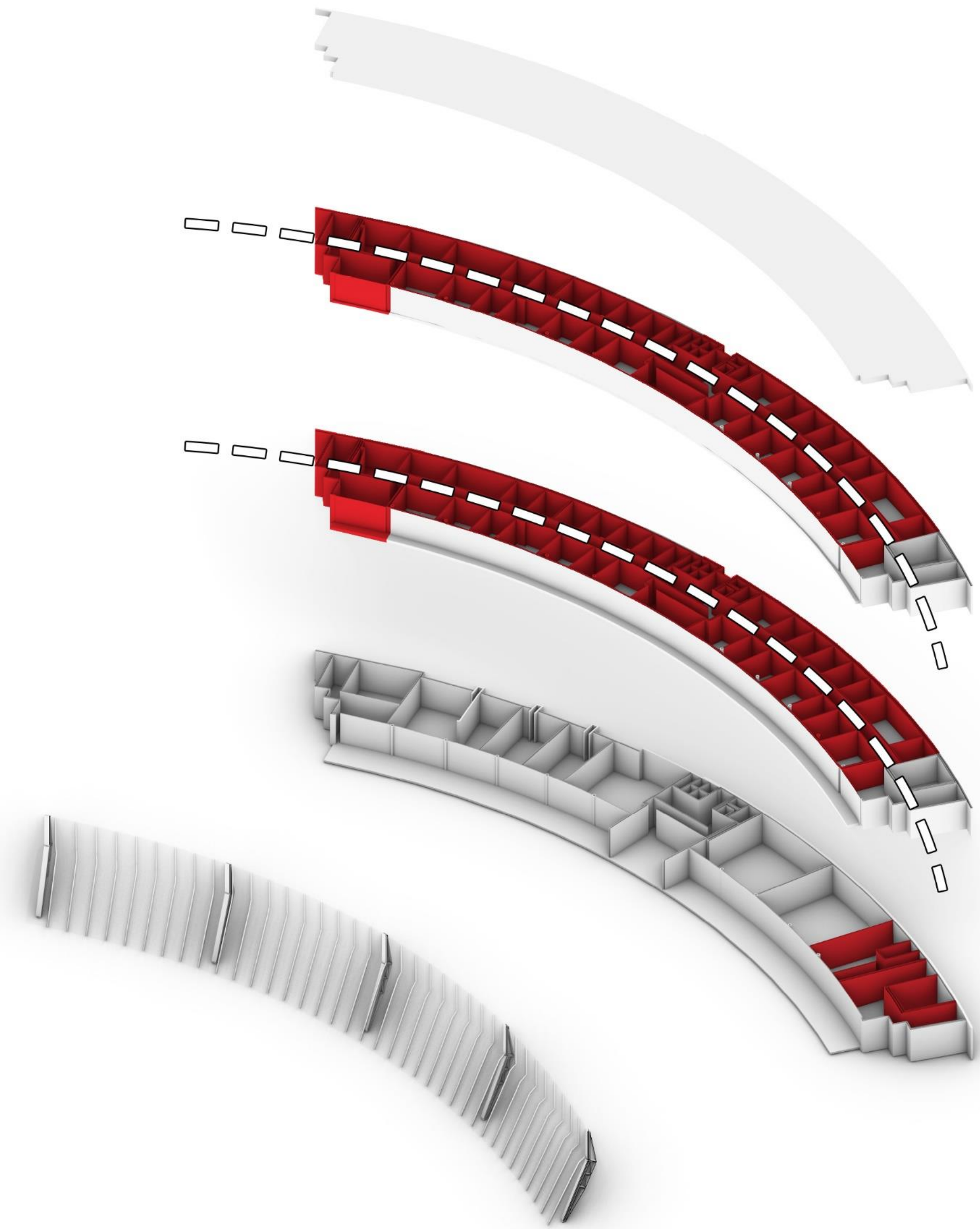
3D ZONING

- Communal lounges
- Researcher's Residential Units
- Semi Public Co-working Space
- General Services For Researchers
- Sauna
- Coworking Space
- Commercial Part
- Single Bedroom
- Double Bedroom
- Triple Bedroom



ZONE A: RENOVATION OF THE EXISTING BUILDING

RE-USE STRATEGY OF THE EXISTING BUILDING

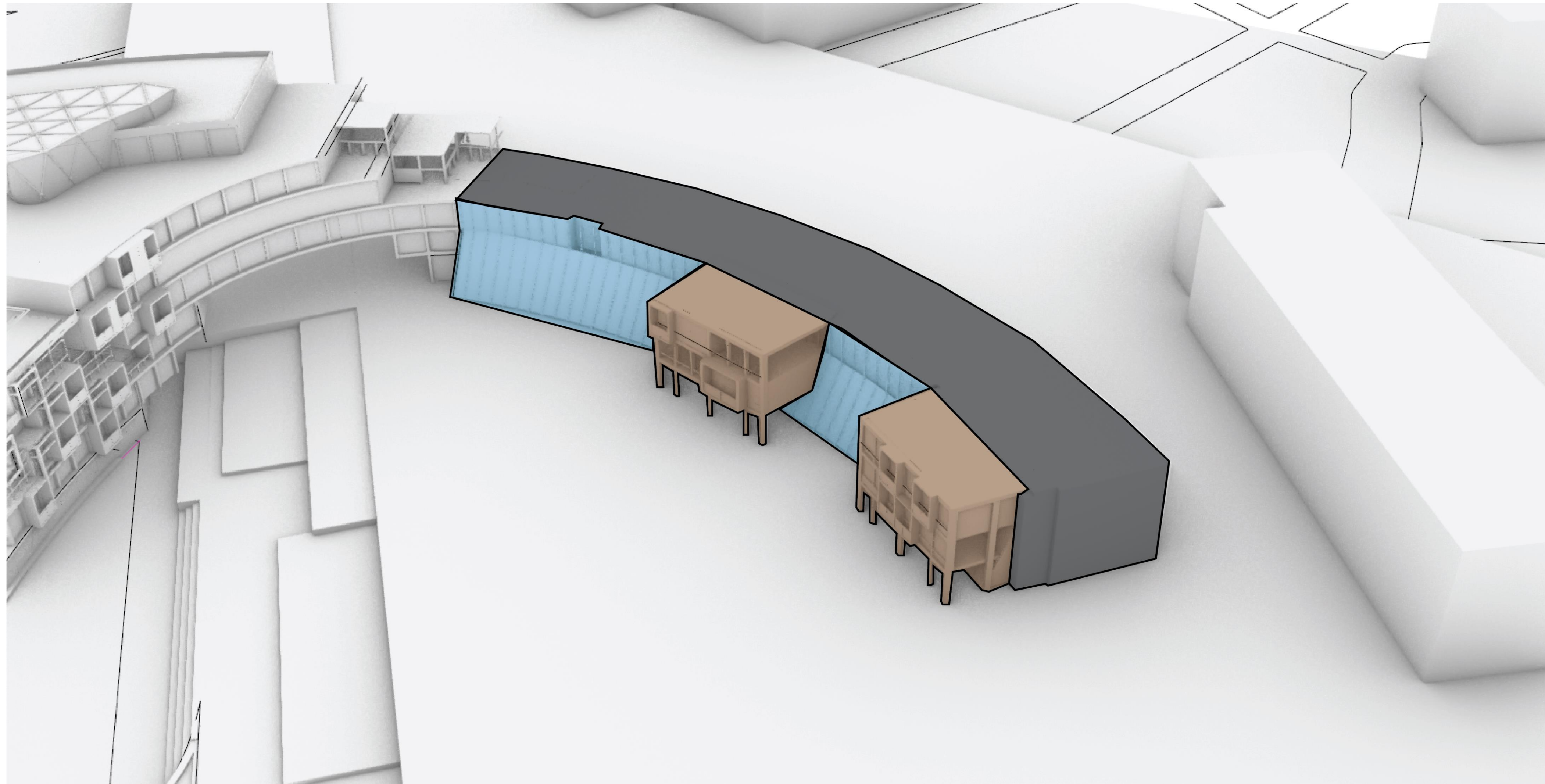


● Demolished

● Existing

● Constructed

RE-USE STRATEGY OF THE EXISTING BUILDING



■ Existing building slabs

Existing building slabs are untouched while some of the interior walls are removed to redesign the plan for residential units

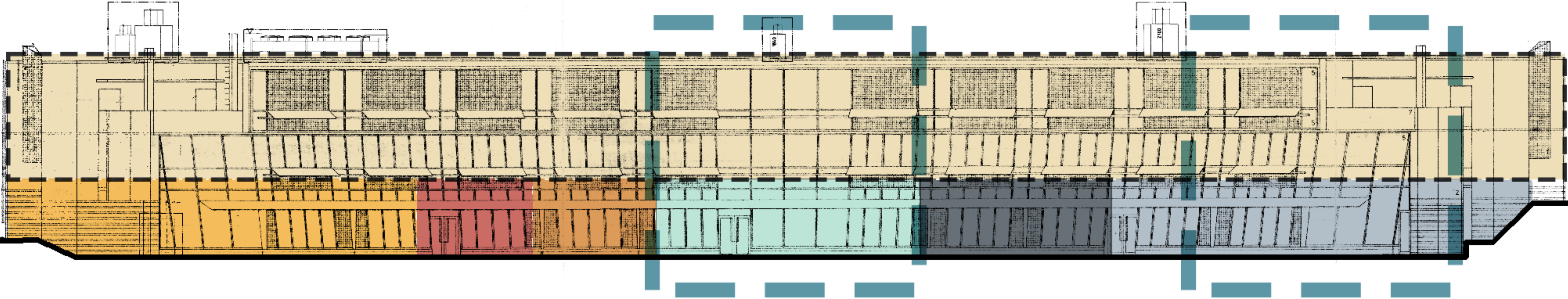
■ Existing facade treatment

Most of the existing glass facade will be kept in place to preserve the identity of the building, however the glazing will be renovated to enhance its quality and

■ ADDED MASSES

Extensions will be added on the north side of the building to create communal spaces on the beautiful landscape of the proj-

ELEVATIONAL ZONING



 Residential Units

 Coworking Space

 Meeting Room

 Entrance Hall

 Cafe

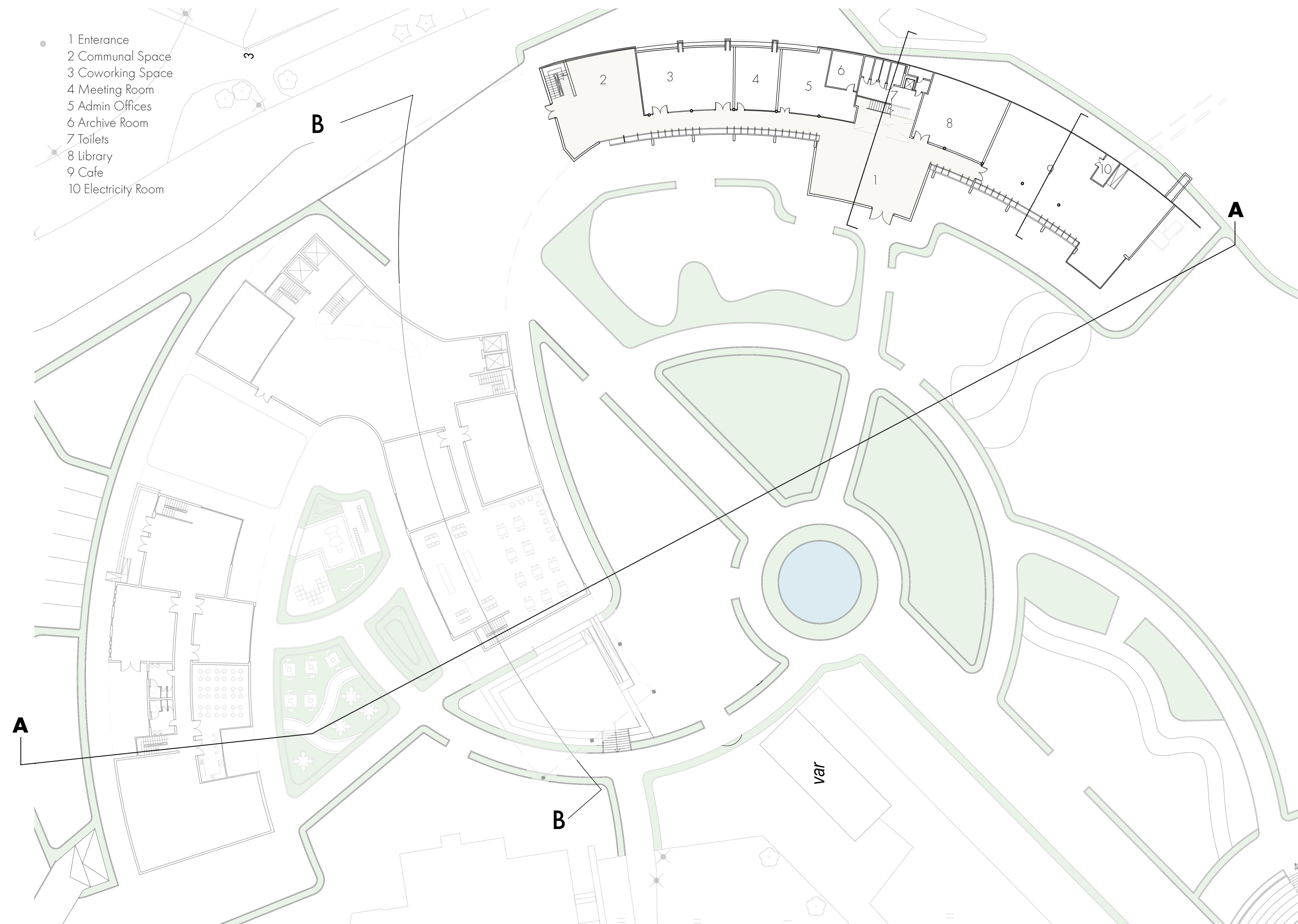
 Admin

 Plug-Ins

 Library

PLANS

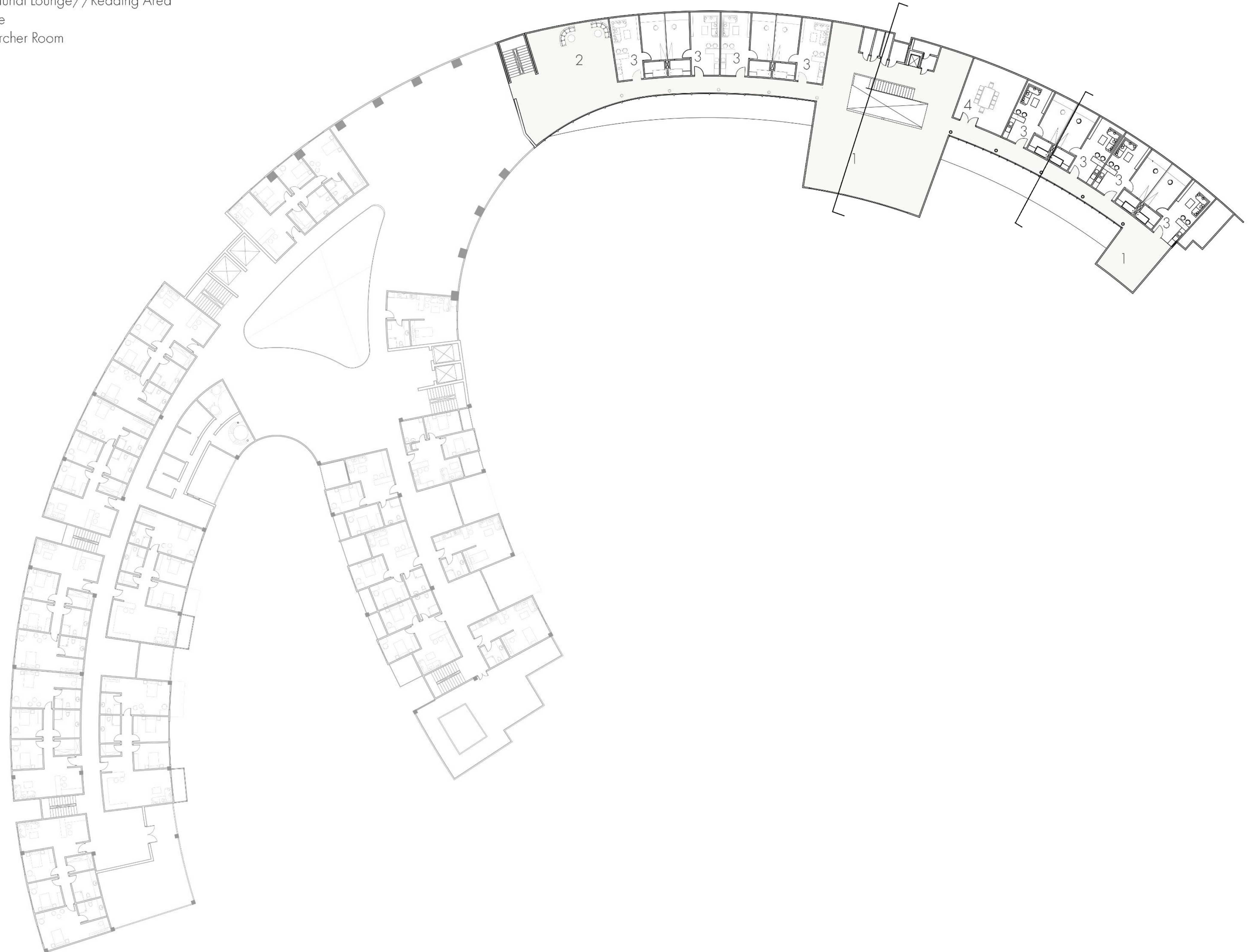
- 1 Entrance
- 2 Communal Space
- 3 Coworking Space
- 4 Meeting Room
- 5 Admin Offices
- 6 Archive Room
- 7 Toilets
- 8 Library
- 9 Cafe
- 10 Electricity Room



Ground Floor Plan

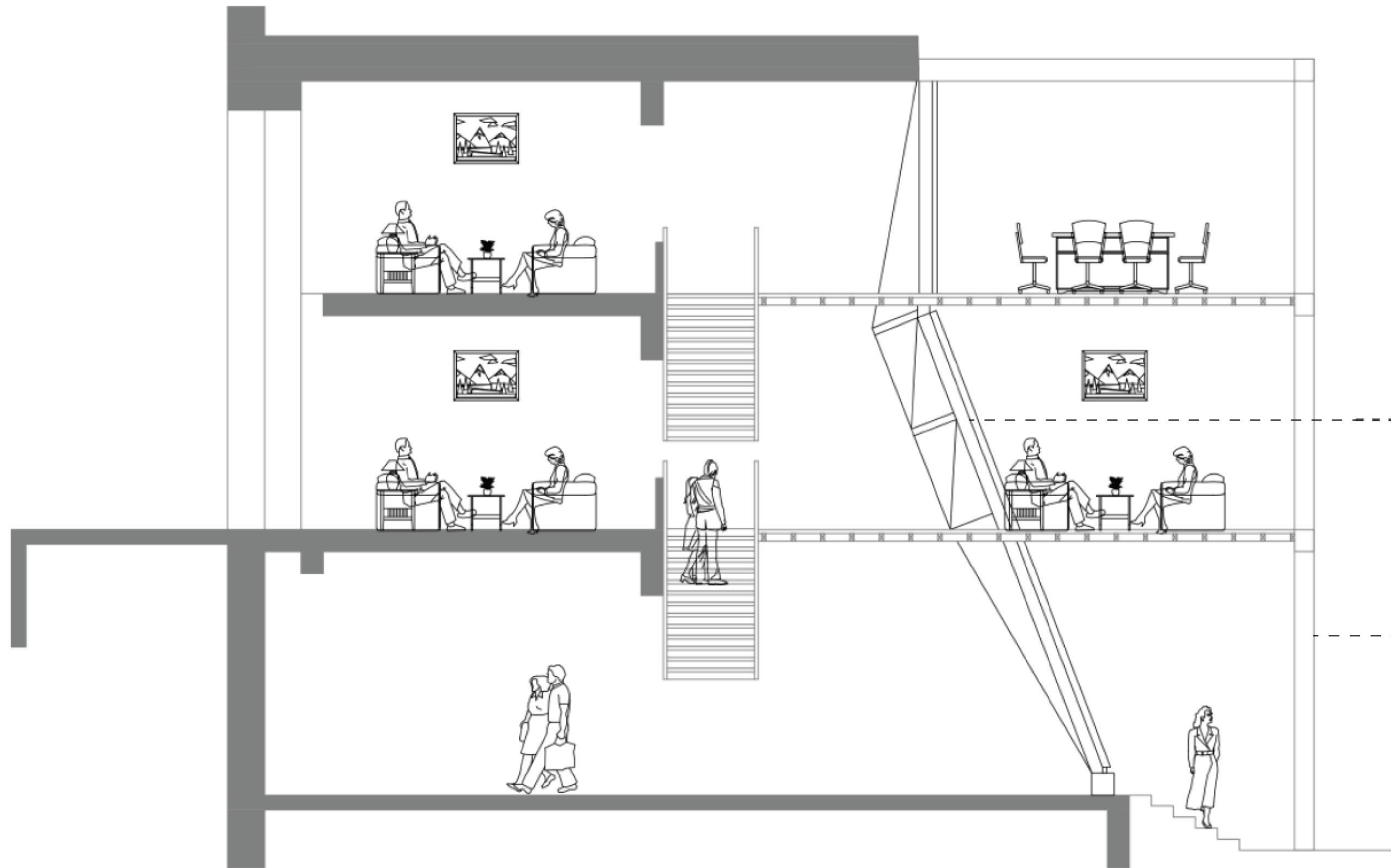
PLANS

- 1 Communal Lounge//Reading Area
- 2 Lounge
- 3 Researcher Room



Typical Floor Plan

SECTION A-A



The world's first low-carbon glass ORAE® combined with the best in class coatings

- Low embodied carbon glass
- A reduction of 42% compared to our European baseline clear glass
- Carbon footprint of ORAE@: only 6.64 kg CO₂ eq./m² (from Cradle-to-Grave for a 4mm substrate)
- High recycled glass content. 64%



Cross-laminated Timber (CLT)

1. 12.5 mm Gyproc GNE 13 Normal
2. 120 mm CLT element
3. 0.2 mm ISOVER Vario® Xtra
4. 220 mm ISOVER PLUS+ Board 32 between 245 mm ISOVER PLUS+ Stud 1
5. 22 mm Wooden façade Moelven Thermowood

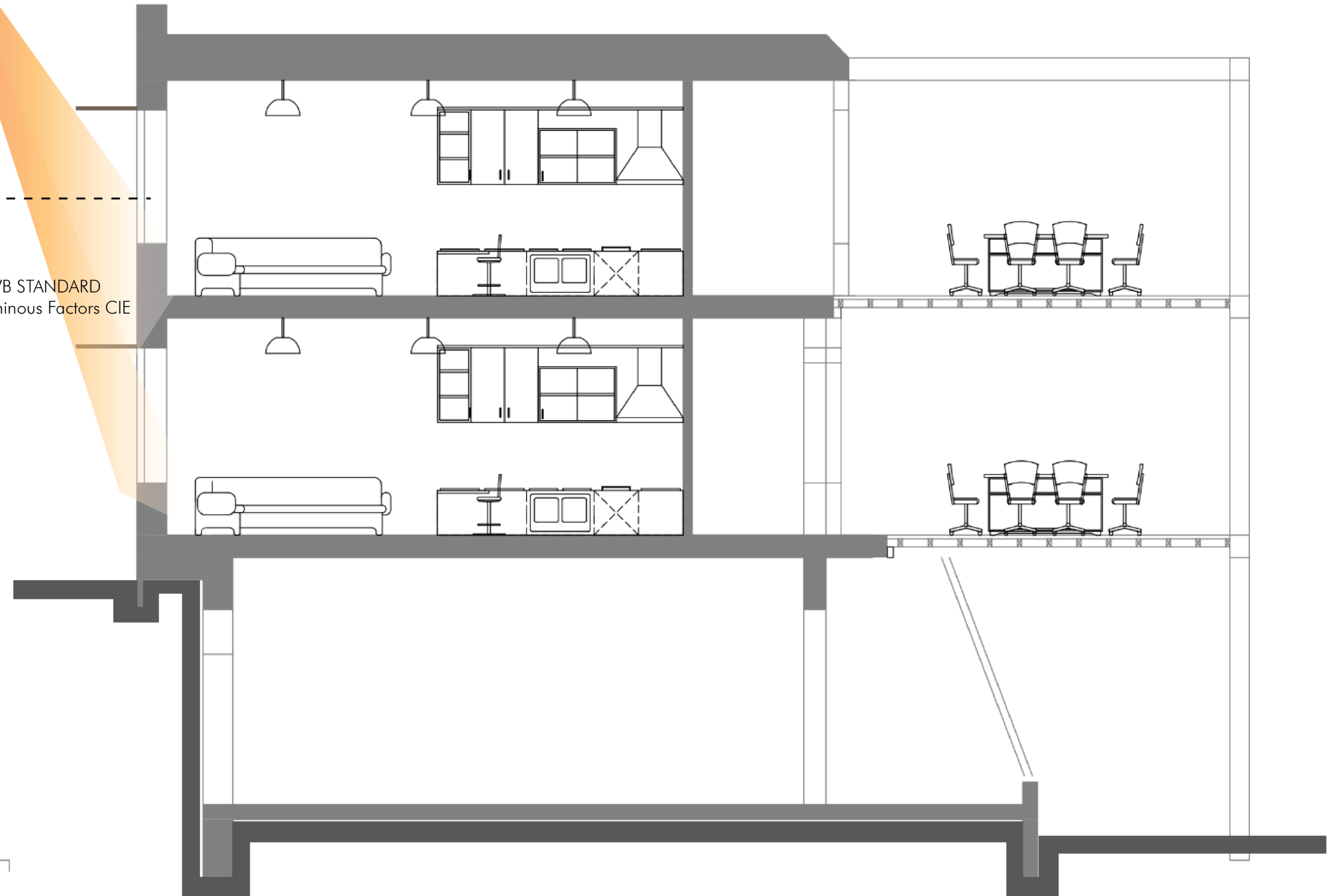


SECTION B-B



Window Glazing

Glazing 1: ORAÉ (6mm) – Annealed
Cavity 1: Argon 90% 16 mm
Glazing 2: PLANICLEAR (6mm) – Annealed PVB STANDARD (0.38mm)
PLANICLEAR (6mm) – Annealed Luminous Factors CIE (15-2004)
Light Transmittance (TL): 80%
Outdoor Reflectance (R_{Le}): 15%
Indoor Reflectance (R_{Li}): 14%
Energy Factor EN410 (2011-04)
Transmittance (TE): 65%
Outdoor Reflectance (R_{ee}): 13%
Indoor Reflectance (R_{ei}): 12%
Absorptance A1 (AE1): 8%
Absorptance A2 (AE2): 15%
Solar Factors EN410 (2011-04)
Solar Factor (g): 0.75
Shading Coefficient (SC): 0.869



EXISTING BUILDING

Extension Interior

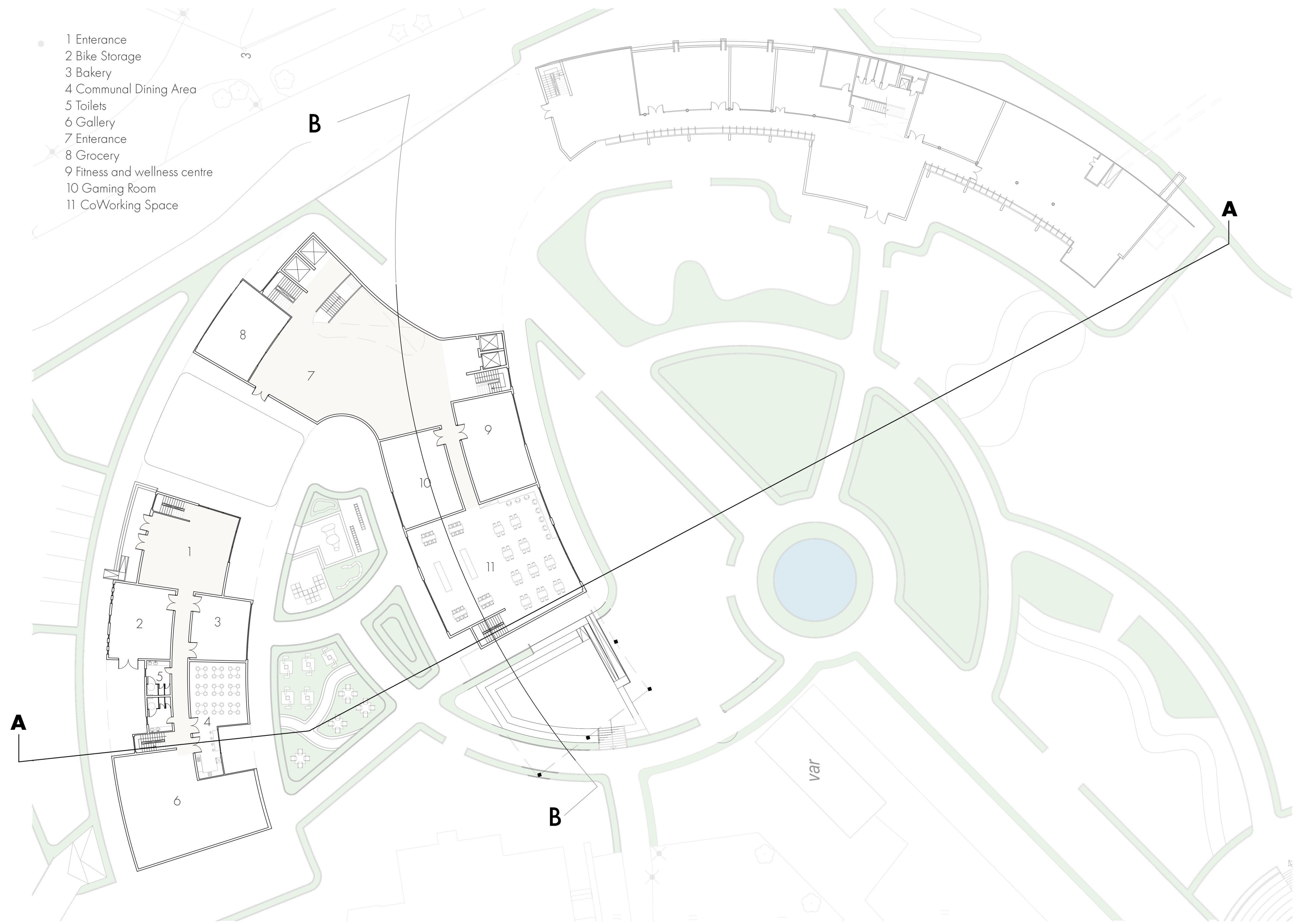


ZONE B: NEW BUILDING



PLANS

- 1 Entrance
- 2 Bike Storage
- 3 Bakery
- 4 Communal Dining Area
- 5 Toilets
- 6 Gallery
- 7 Entrance
- 8 Grocery
- 9 Fitness and wellness centre
- 10 Gaming Room
- 11 CoWorking Space



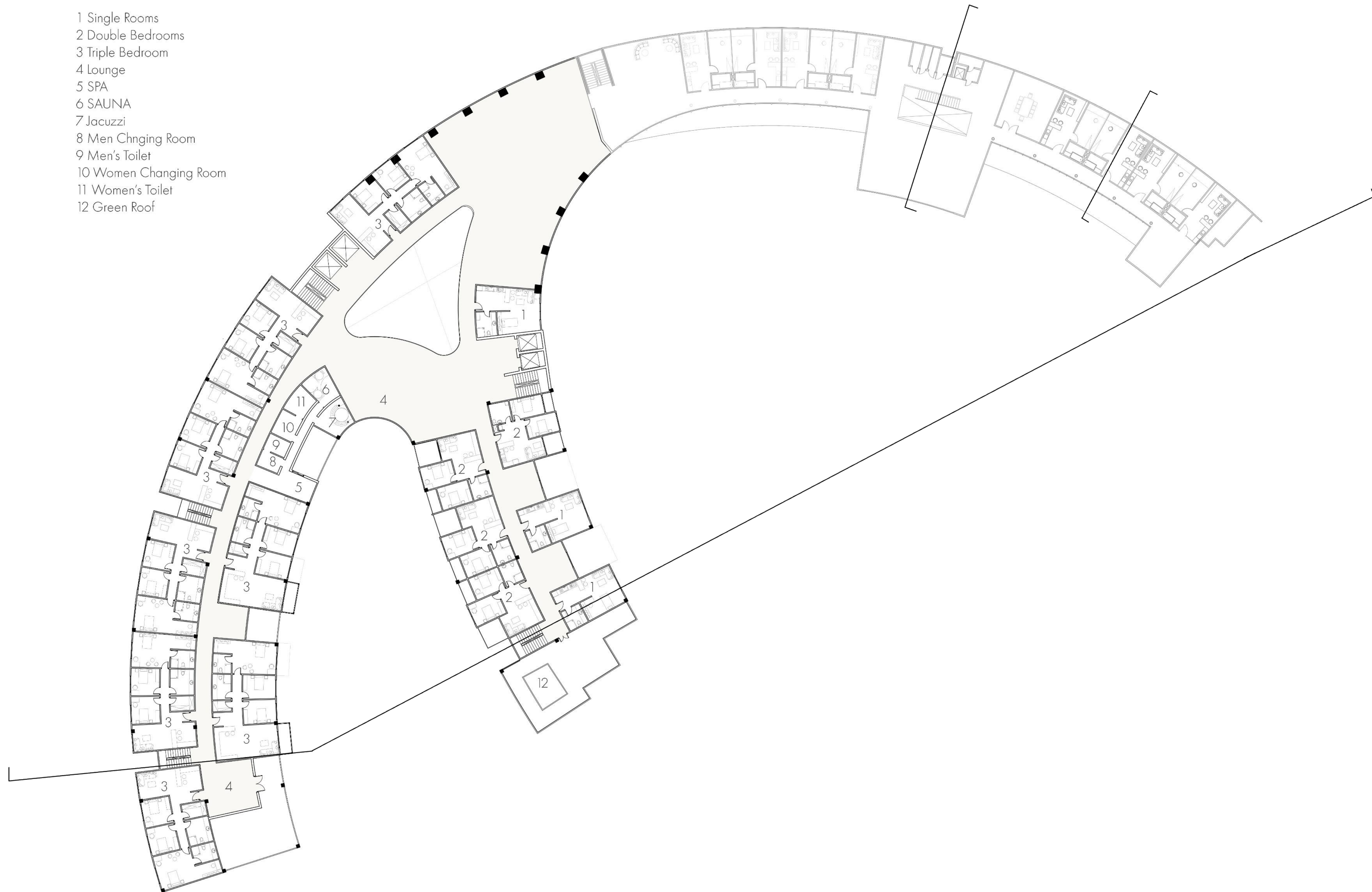
Ground Floor Plan

URBAN STEPS



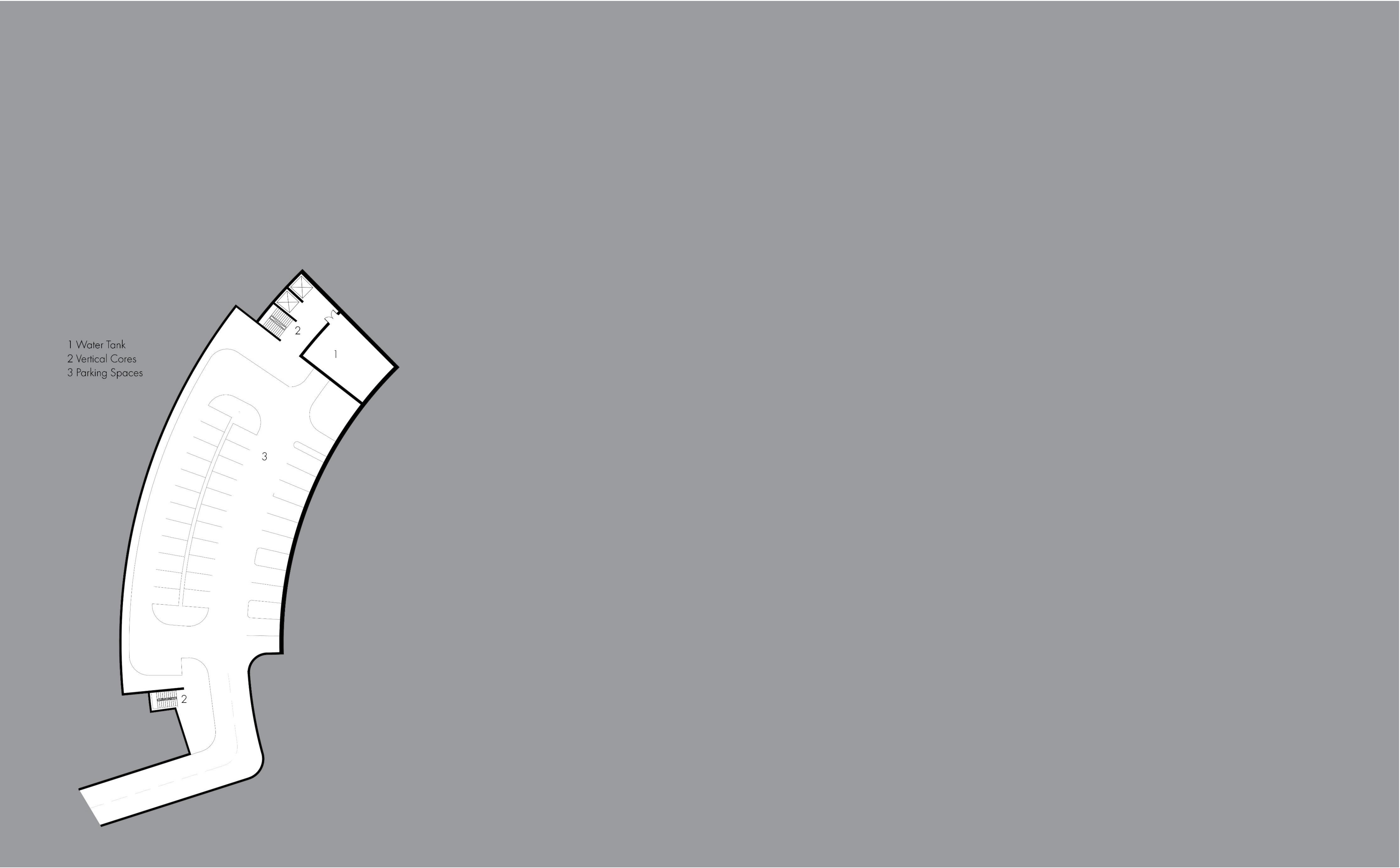
PLANS

- 1 Single Rooms
- 2 Double Bedrooms
- 3 Triple Bedroom
- 4 Lounge
- 5 SPA
- 6 SAUNA
- 7 Jacuzzi
- 8 Men Chnging Room
- 9 Men's Toilet
- 10 Women Changing Room
- 11 Women's Toilet
- 12 Green Roof



Typical Floor Plan

PLANS

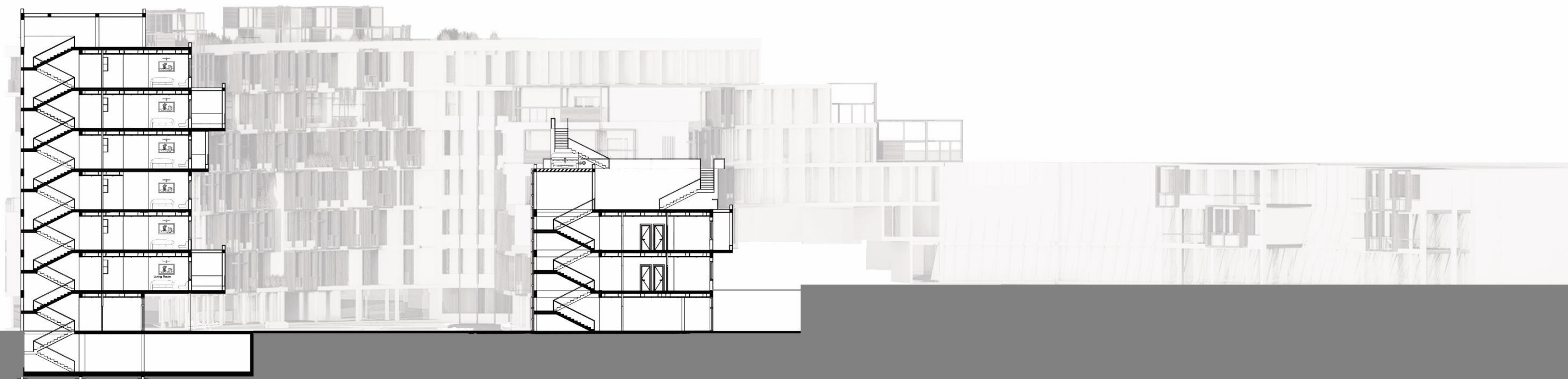


Under Ground
Parking Floor Plan

SECTION A-A

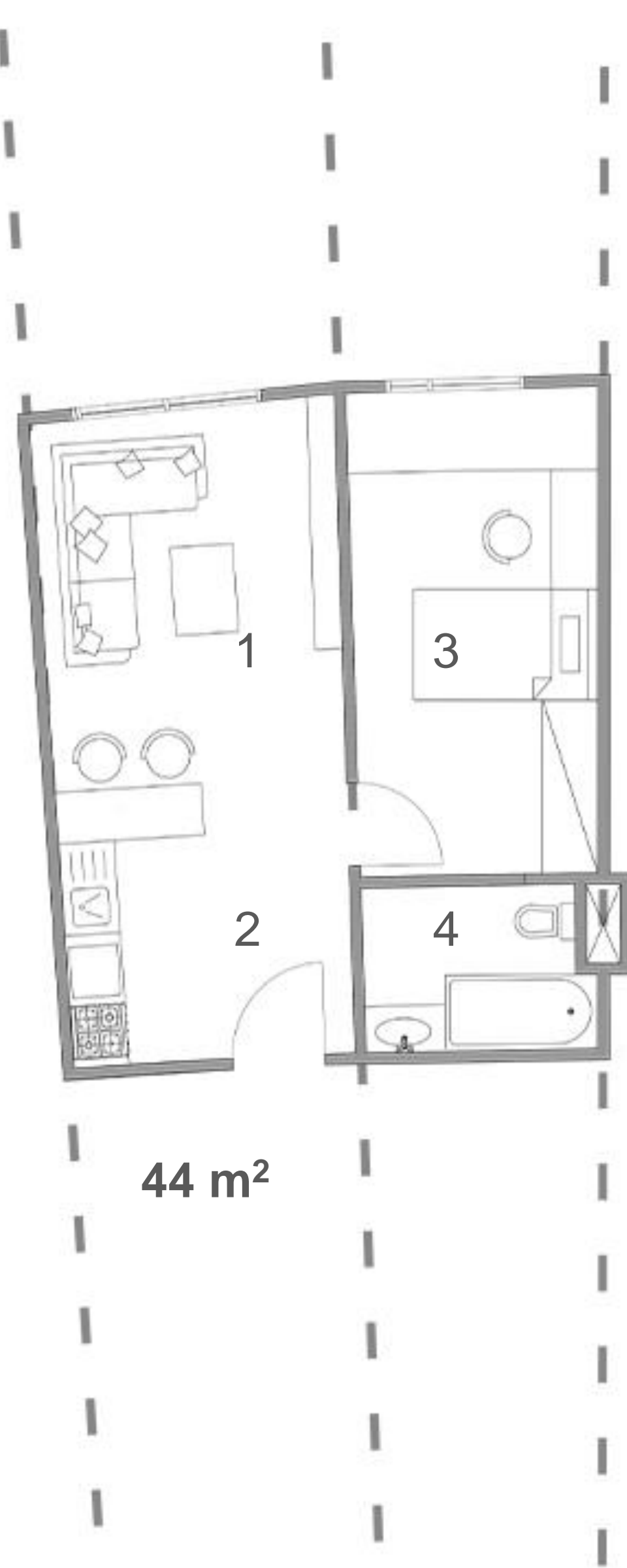


SECTION B-B



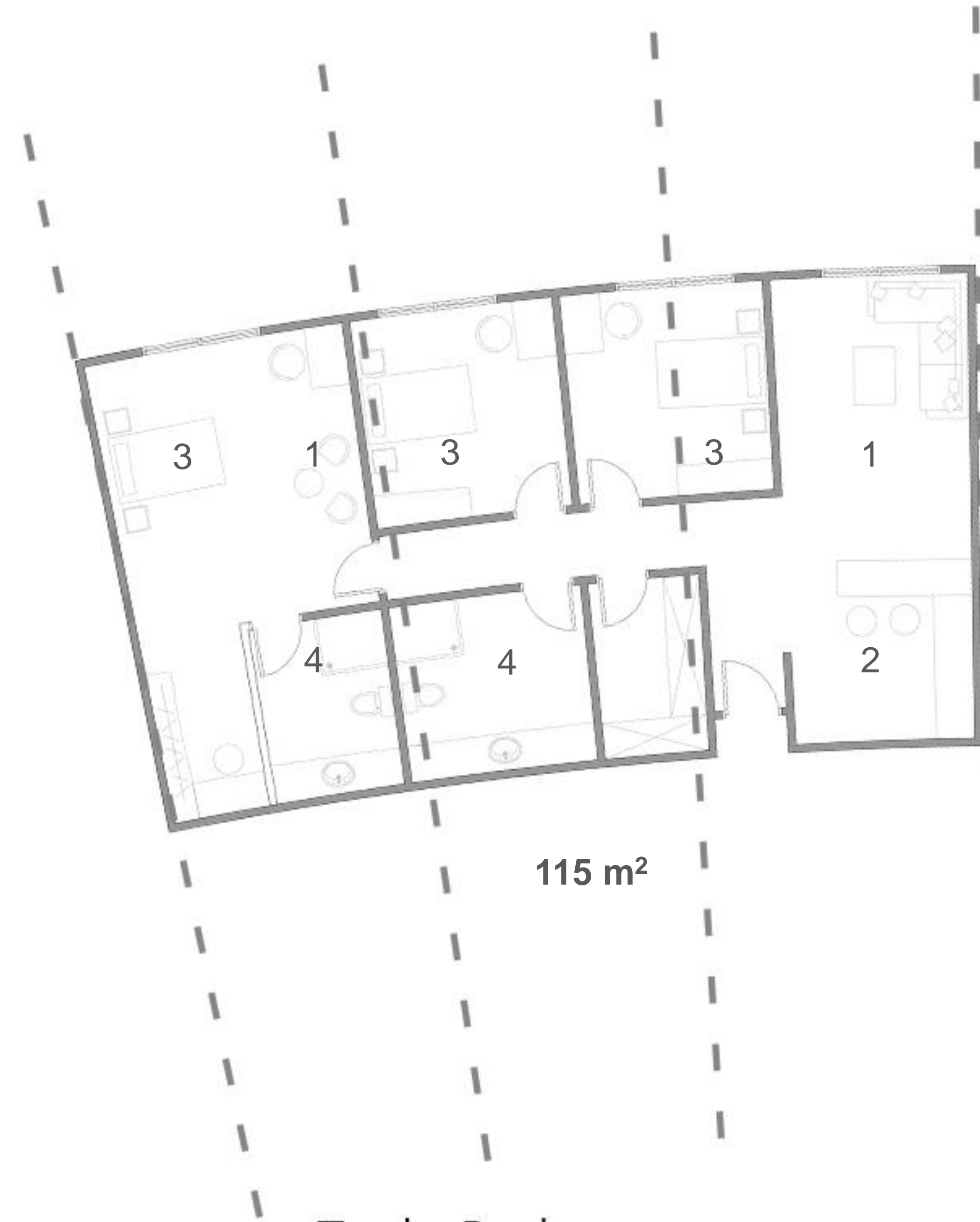
UNITS TYPES

- 1. Living Area
- 2. Kitchenette
- 3. Bedroom
- 4. Bathroom



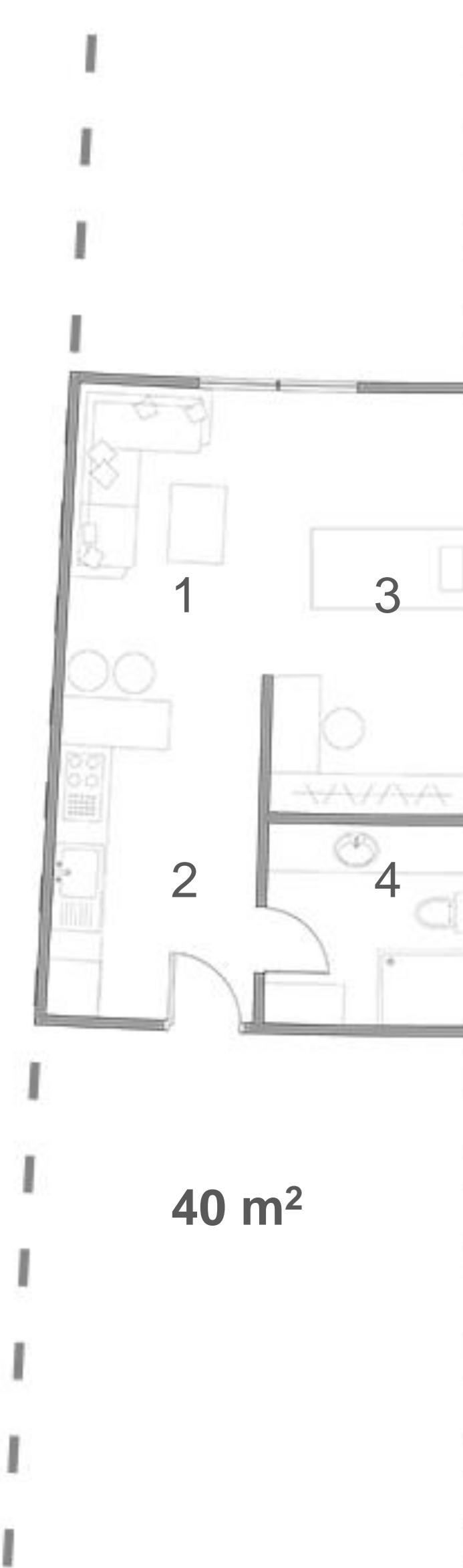
44 m²

Researchers'
Bedroom



115 m²

Triple Bedroom



40 m²

Single Bedroom



55 m²

Double Bedroom

SINGLE BEDROOM UNIT



SINGLE BEDROOM UNIT



SINGLE BEDROOM UNIT



DOUBLE BEDROOM UNIT



DOUBLE BEDROOM UNIT



EXIT ROUTES

Emergency Exit Route
Distance between each stair < 30 m



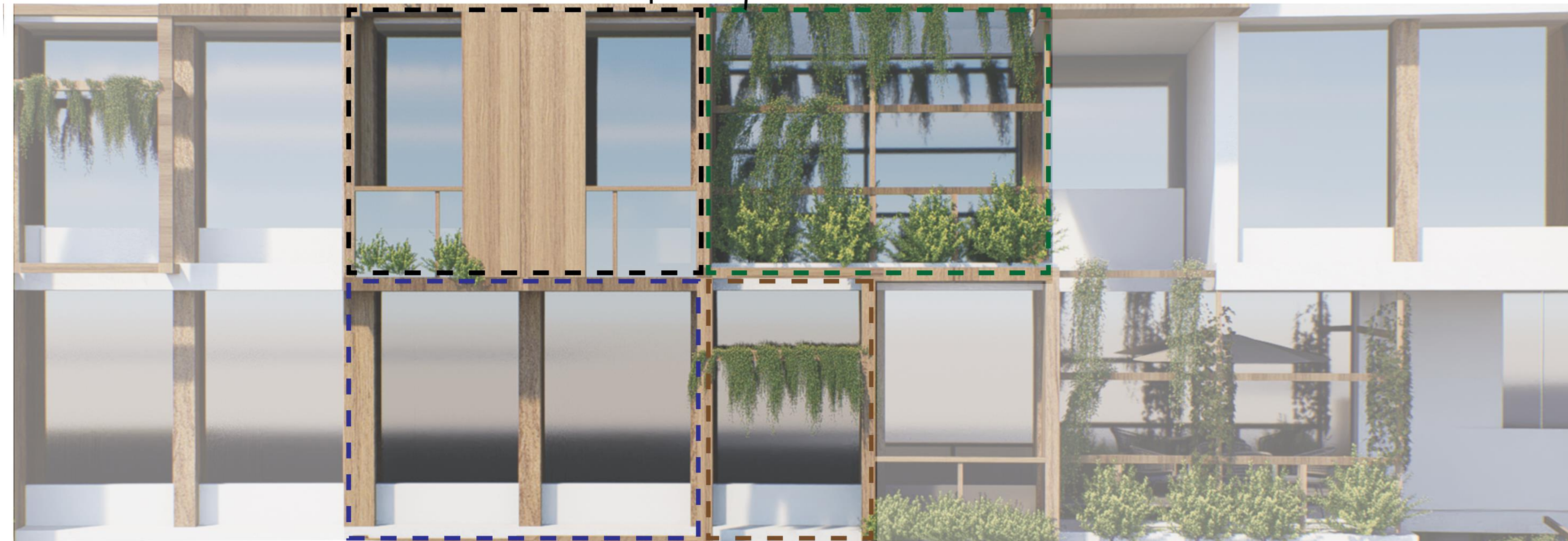
FACADE ANALYSIS

PORTRUDED TERRACES IN 3-BEDROOM UNITS

Portruded provide shading for units below it and for unit itself from high summer sun

RECESSED COMMUNAL SPACED

Recessed units create exterior communal spaces with green terraces and shading and serve as an extension to interior communal spaces



Flushed 2-bedroom units with terrace

Flushed rooms in 2 bedroom units are shaded by the portruded terraces above them during summer, while allowing it to penetrate rooms through winter due to low altitude

Flushed 2-bedroom units with no terrace above

Flushed rooms with no terrace above will have a shaded formwork to provide shading from high summer sun

PLYWOOD FROM DEMOLISHED BUILDING TO BE REUSED

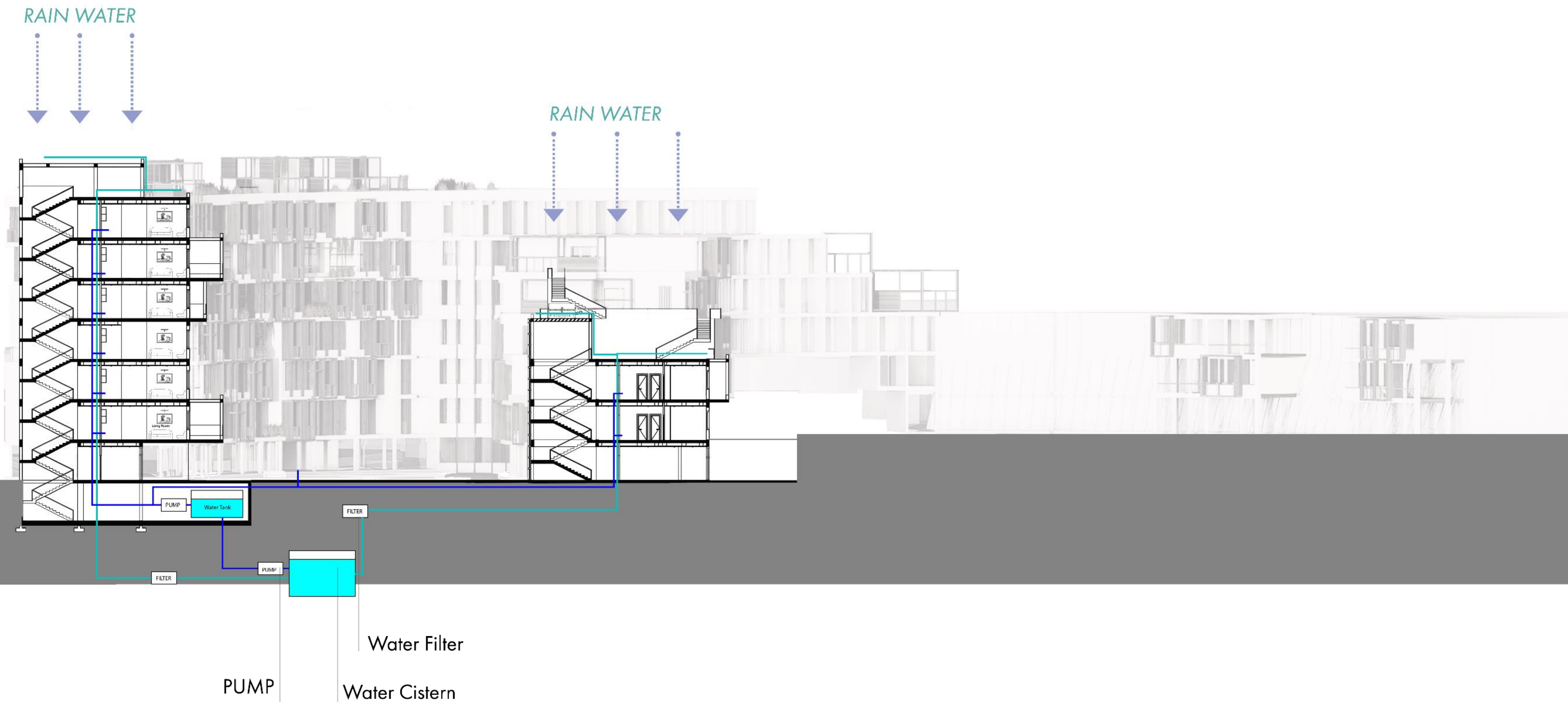
Overhead hangs of portruded terraces and framework will be constructed using plywood from the demolished building

RECESSED OUTDOOR COMMUNAL SPACES

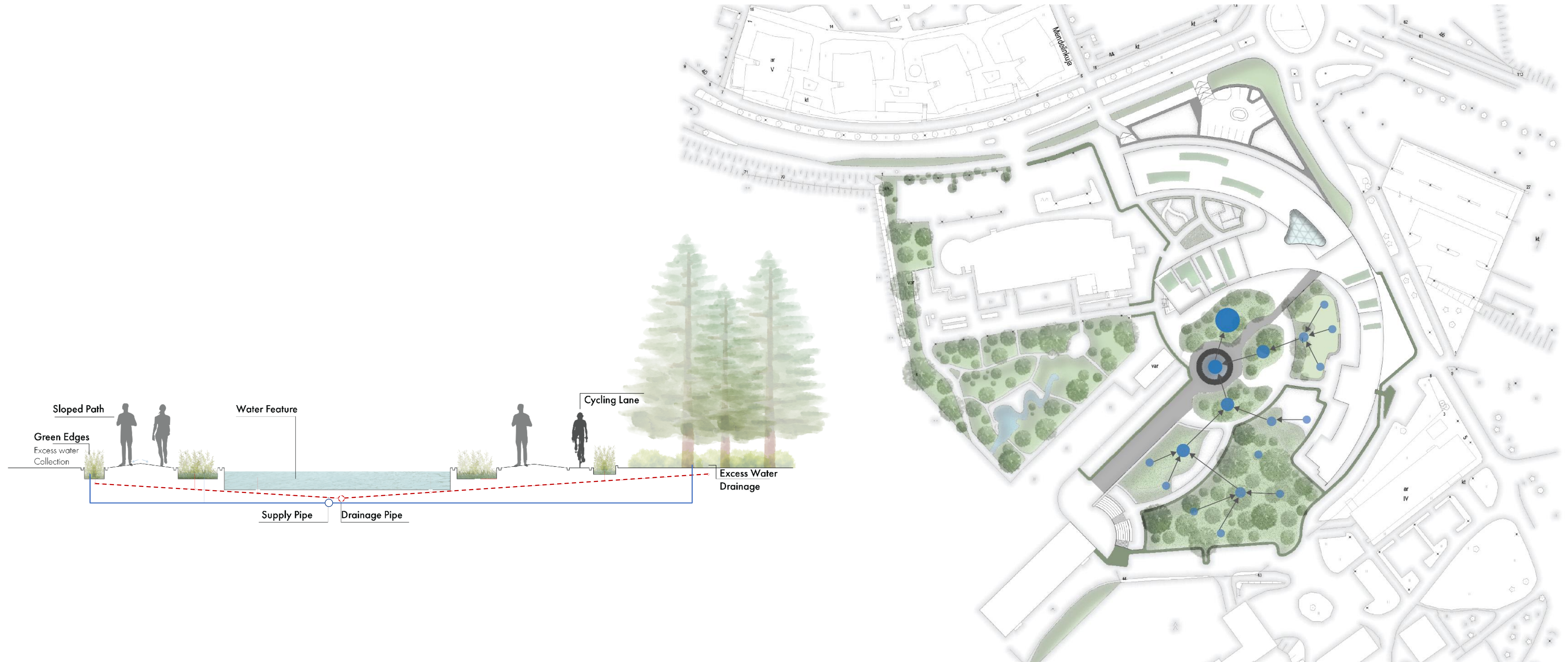


RAINWATER COLLECTION

Rainwater is collected in roof gardens and landscape gardens and is transported through pipes to underground water cistern, getting filtered right before it. The water is then pumped to a water tank in each building, where it can be repumped again to re-irrigate green roofs and provide water supply to laundry and toilets.



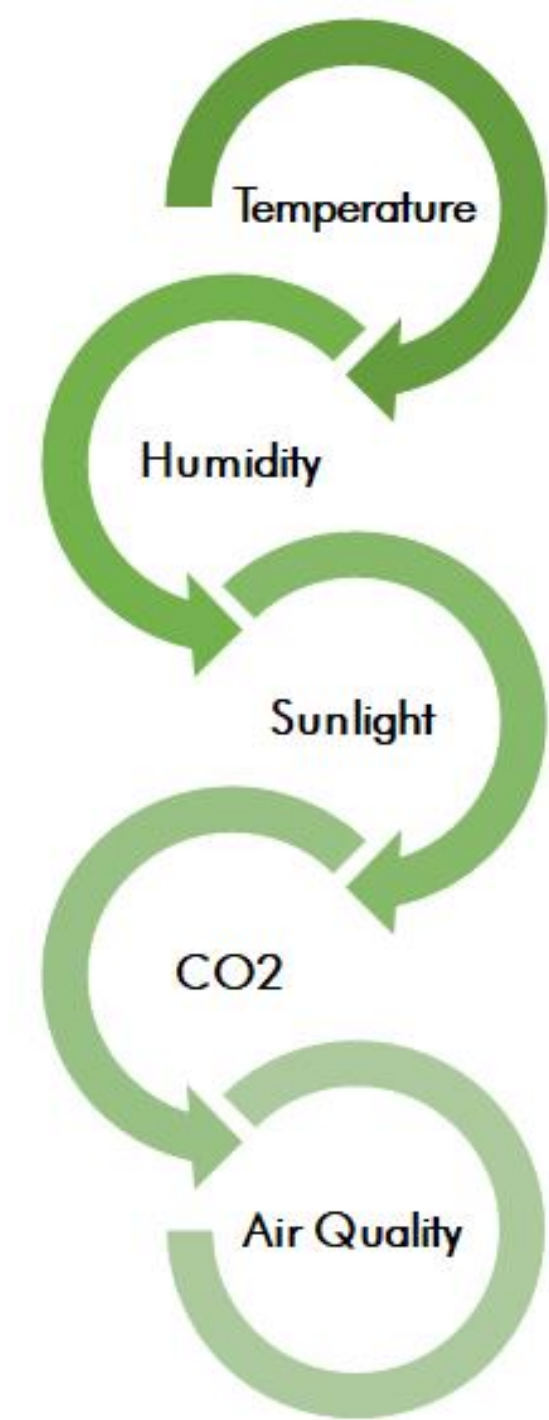
RAINWATER COLLECTION



GREEN ROOFS

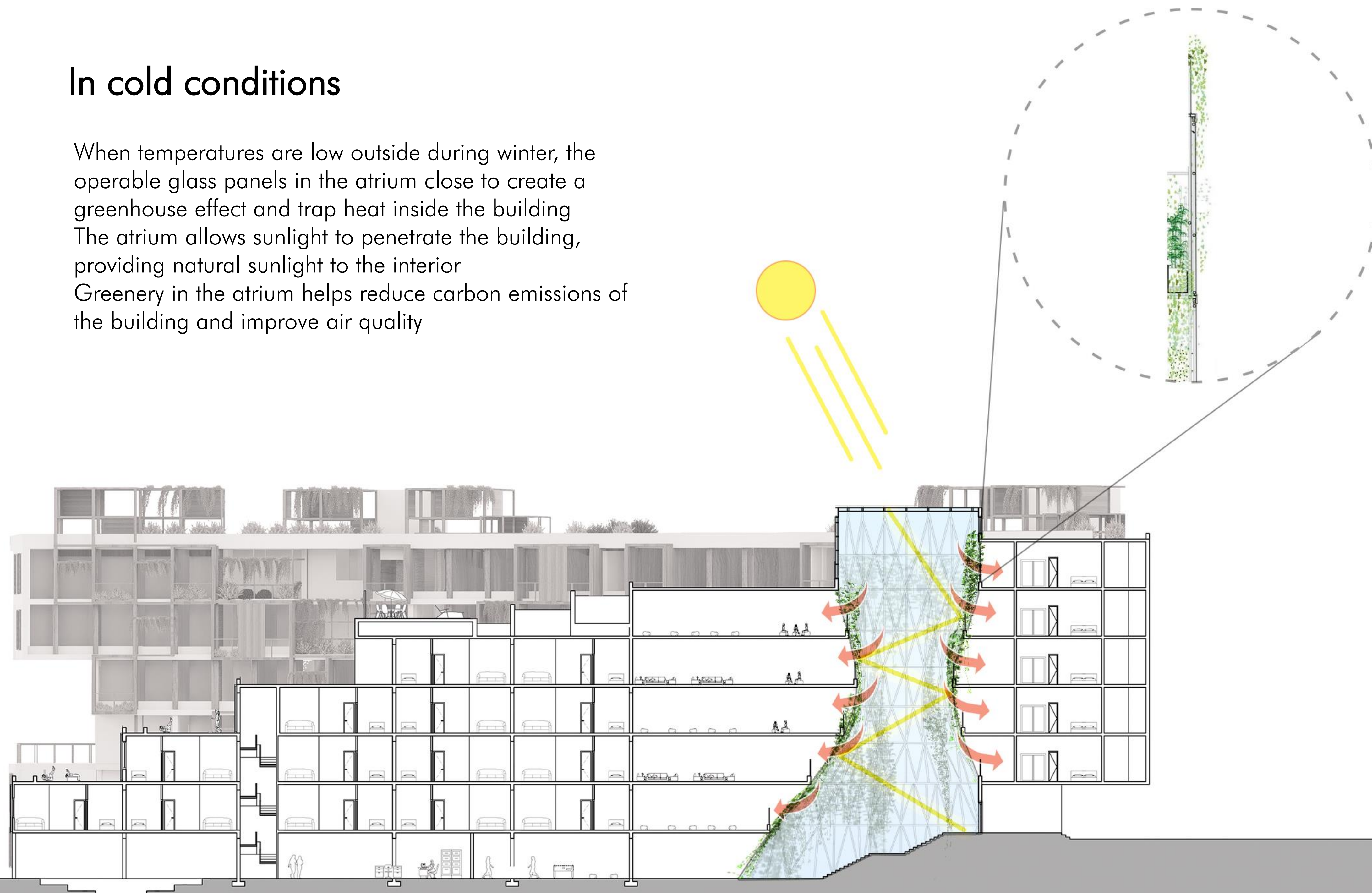


GREEN VERTICAL SPINE

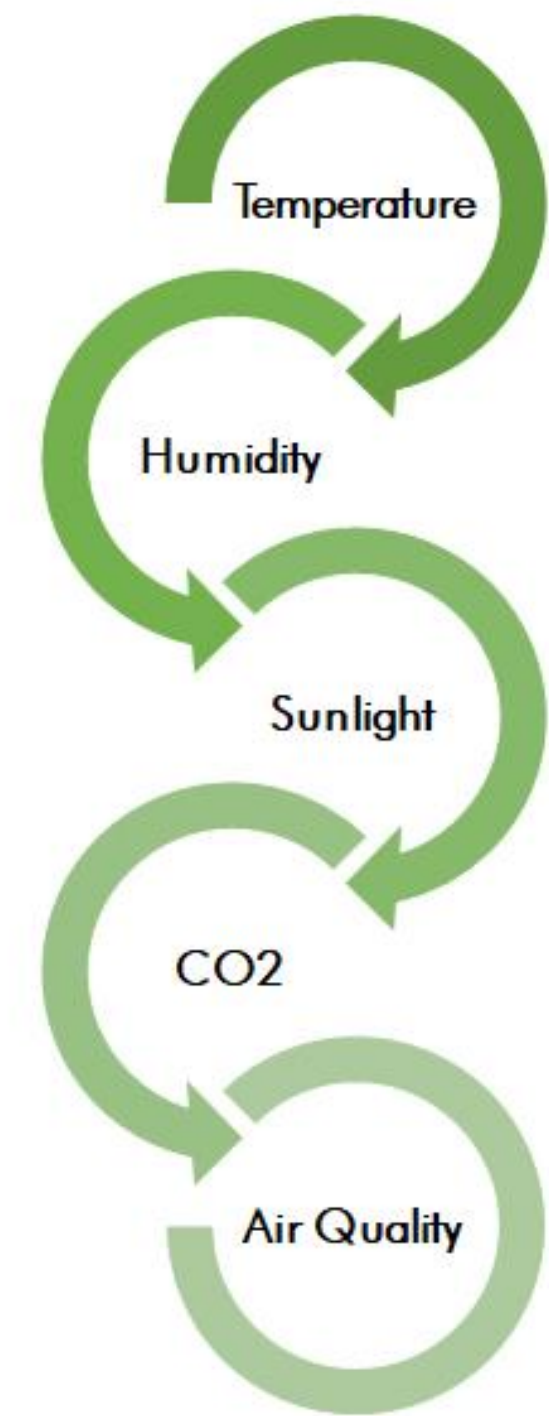


In cold conditions

When temperatures are low outside during winter, the operable glass panels in the atrium close to create a greenhouse effect and trap heat inside the building. The atrium allows sunlight to penetrate the building, providing natural sunlight to the interior. Greenery in the atrium helps reduce carbon emissions of the building and improve air quality.

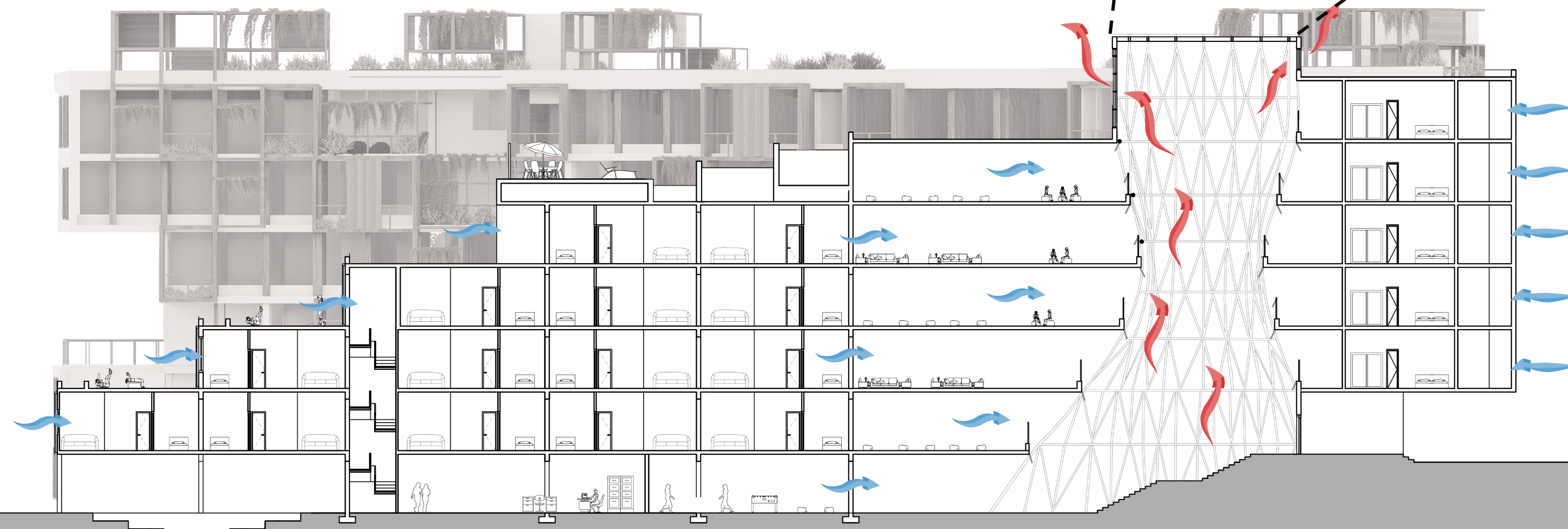
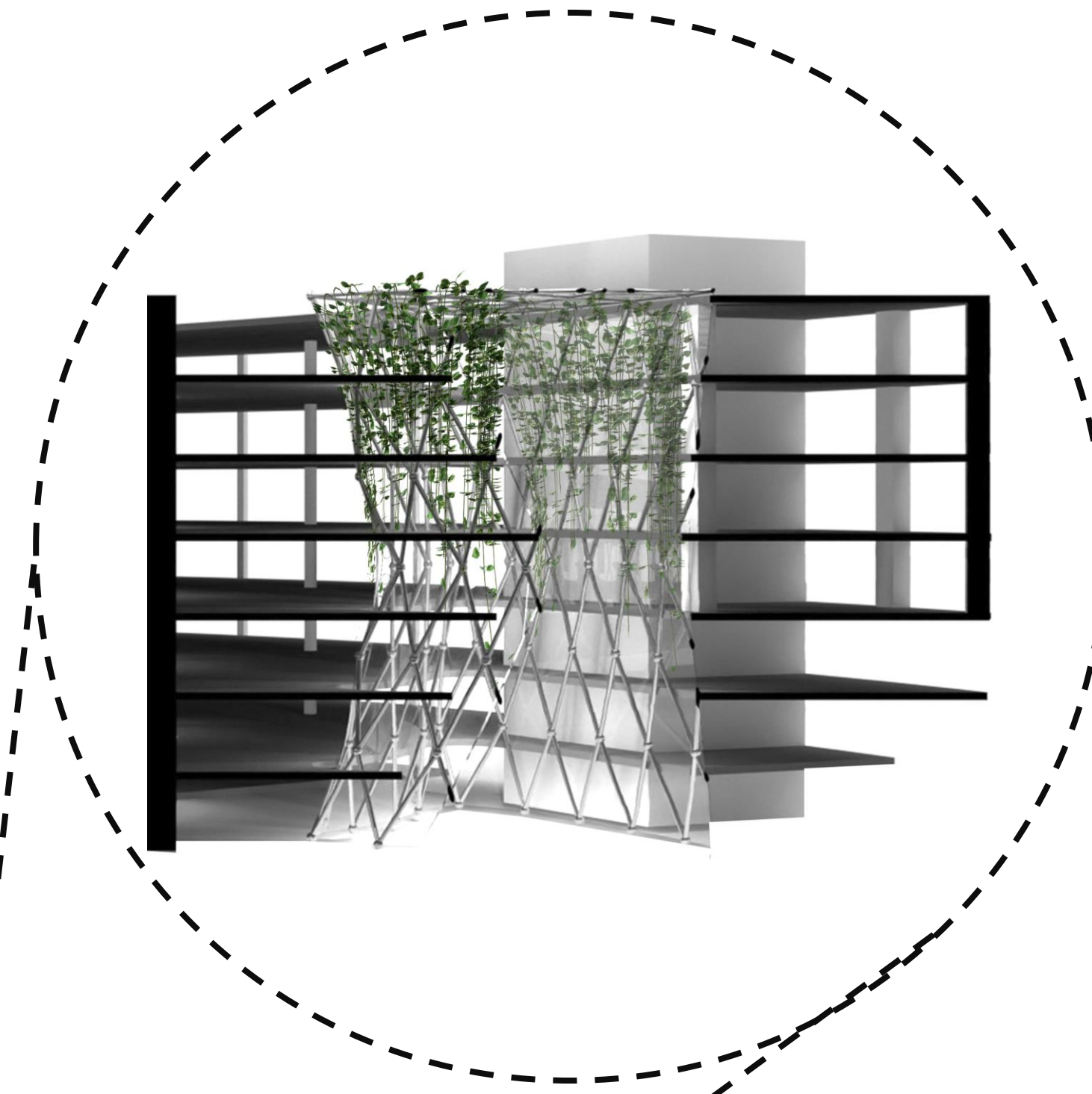


GREEN VERTICAL SPINE

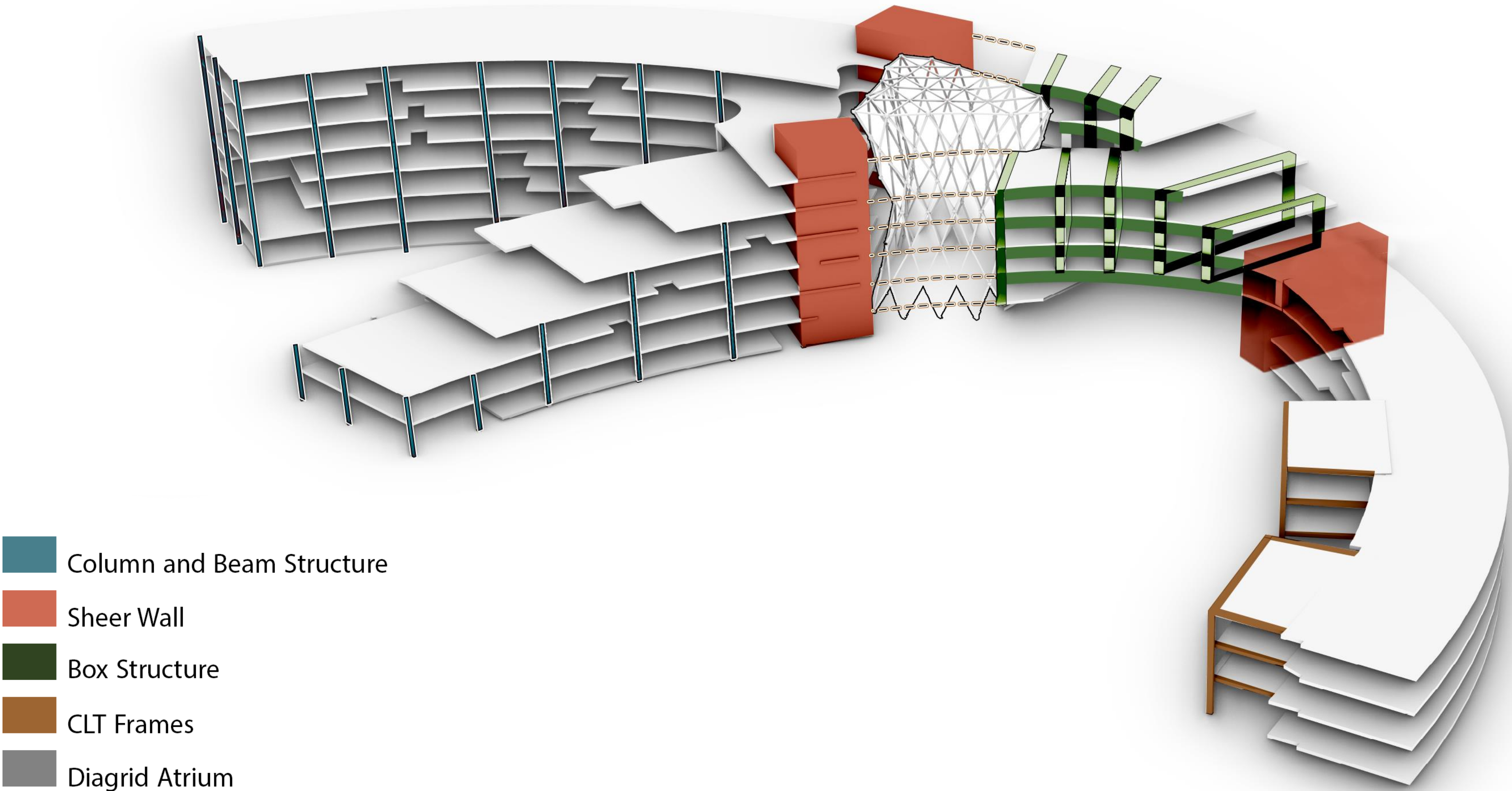


In warm conditions

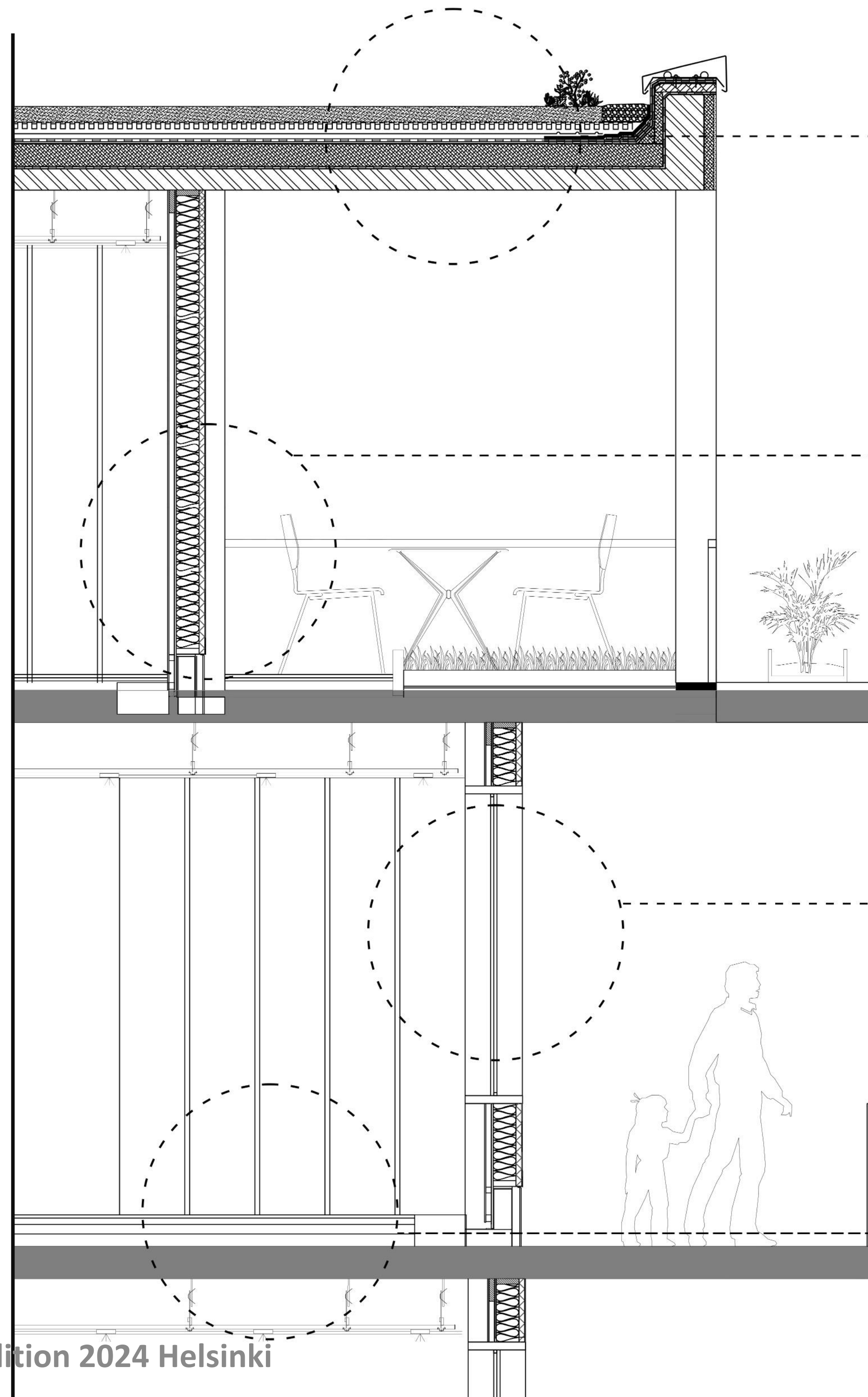
In summer, the panels open to allow cross-ventilation and force hot air outside of the building, thus decreasing the overall temperature inside



STRUCTURE ANALYSIS



WALL SECTION



Planting
 Extensive substrate
 Filtering layer
 Drainage layer
 Geotextyle protection layer
 PE separating and protection layer
 Bitumen vapour barrier with FLL anti-root certification
 Thermal insulation



Glassroc GTX9 18mm
 Weber SerpoVent Wall bracket,
 a wind protection surface, e.g. ISOVER OL-33
 Facade
 Weber SerpoVent Hat Profile
 Permabase plaster board
 SerpoVent Two-layer plaster or other facade material
 Thermal insulation : ISOVER EXTREME 31
 Air Barrier
 ISOVER ACOUSTIC 40 mm
 Gyproc Habito® GH13



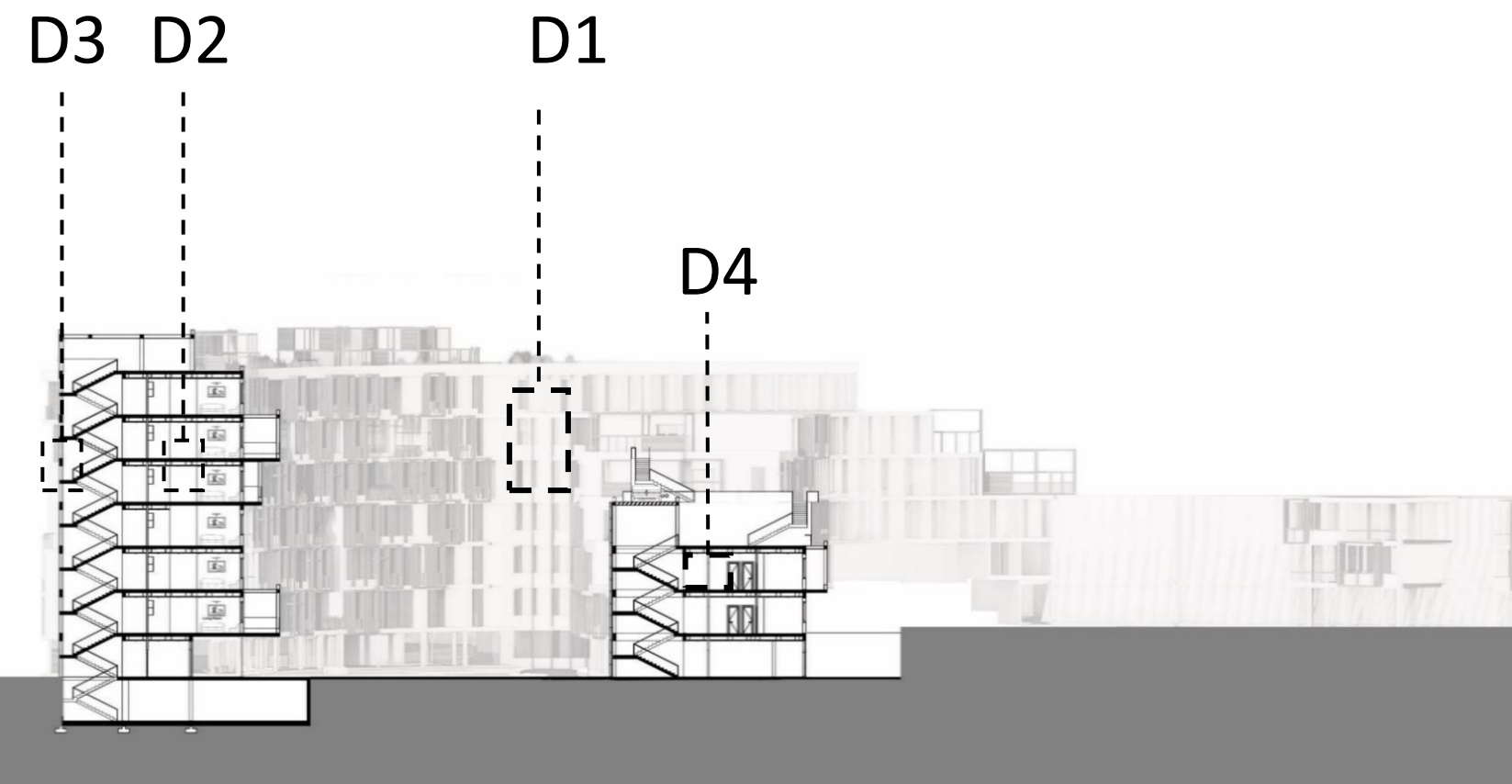
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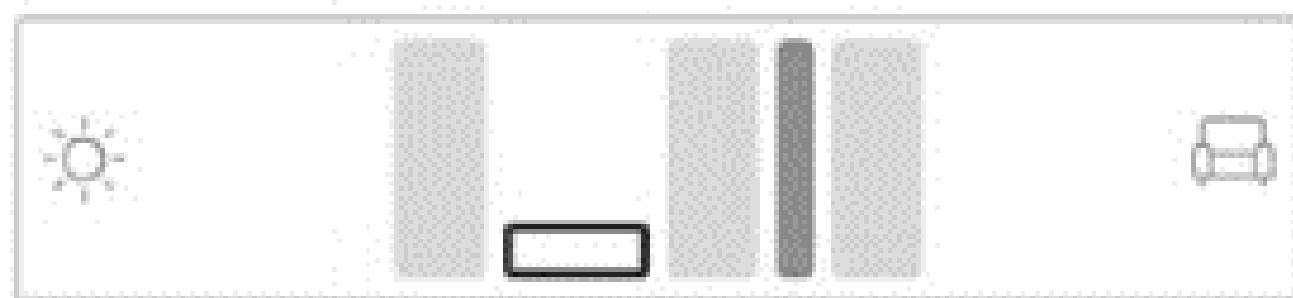


Pre-mixed Leca® lightweight concrete for filling and levelling interior and exterior floors, applied in a single layer, suitable for new construction and renovation.

DETAILS

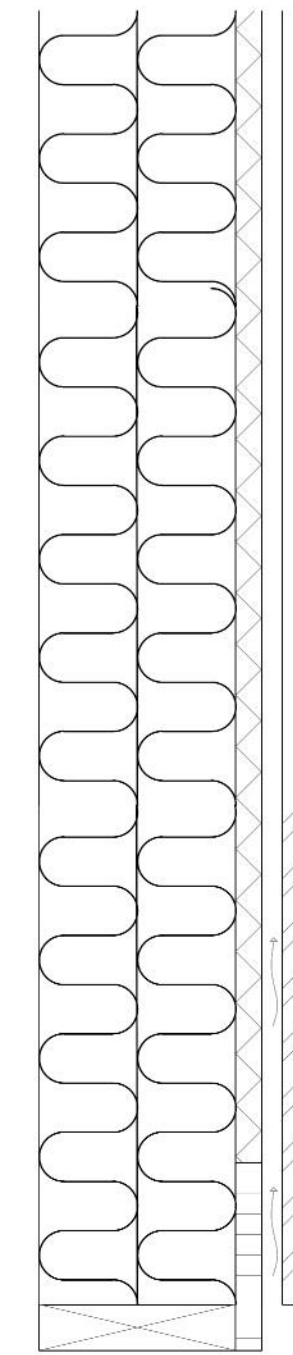


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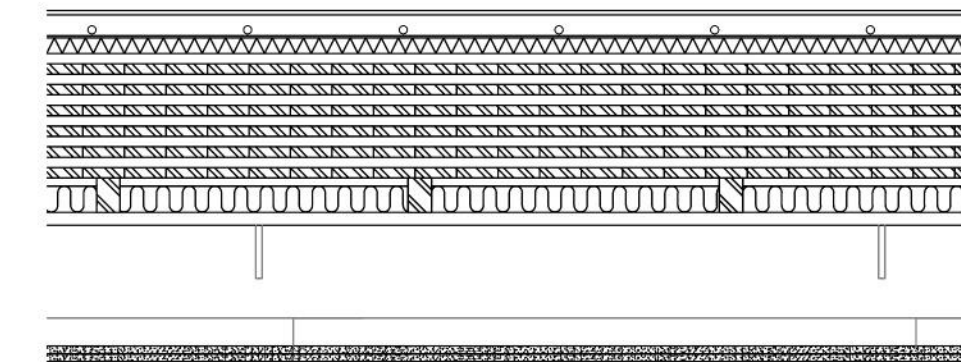


D1 SAUNA Wall

ISOVER Sauna on a wooden wall
 ISOVER Premium 33
 Taping
 Waterproofing
 LITEX 20 mm



SCALE 1:5



SCALE 1:10

D2 Weber 130 core Comfort Plano or Weber 120

Reno Renovation Plano+water circulation floor heating
 30 mm Footstep sound insulation ISOVER
 FLO, dynamic stiffness < 13 MN/m²
 Load-bearing structure, CLT board, here
 240mm
 Wooden supports, height 39mmx66mm k600
 25 mm Collation 25x100 k400
 > 100 MM Installation space, Gyproc GK1 system and GK 40 fai GK 41
 Vibration isolator k850 mm
 Ecophon Focus™ A 1200x1200x20
 8 15+15 Plasterboard Gyproc GFL 15 Fireline
 ×2 (RE160/K230), board seams are overlapped
 Ratings:
 Fire class: REI 60

RESTROOM

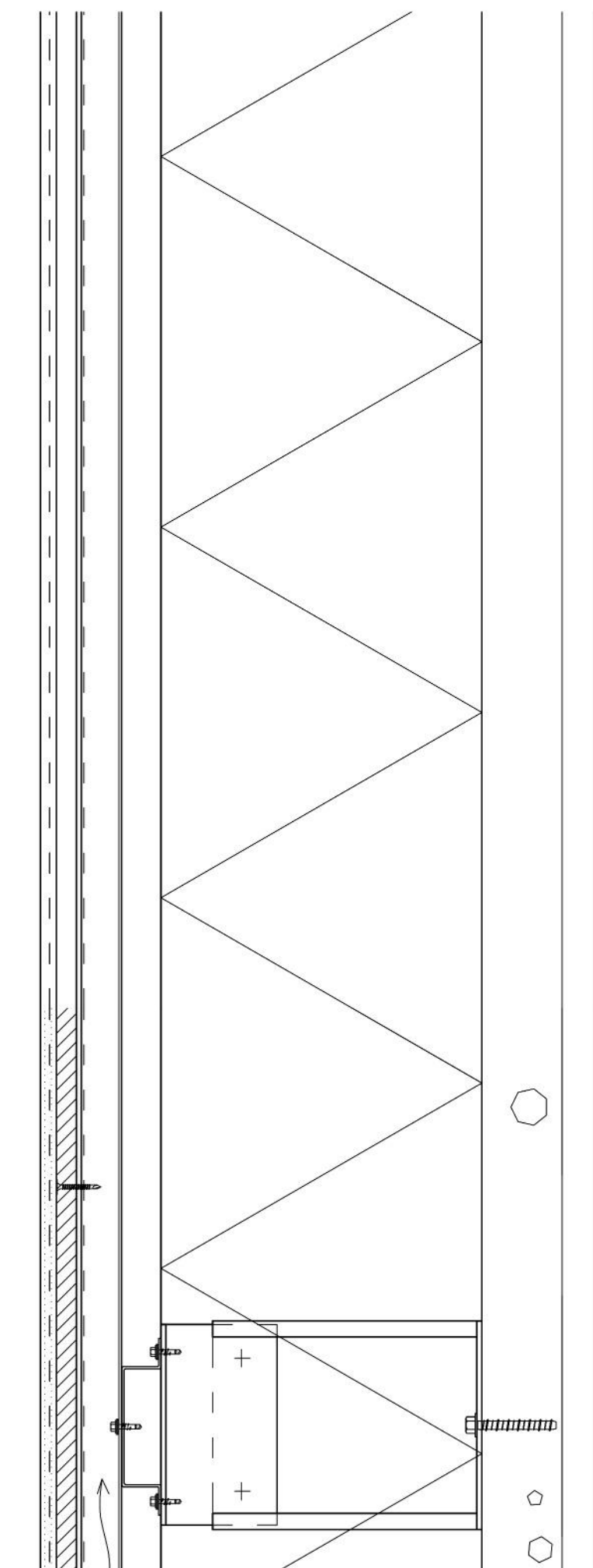
12.5 mm Gyproc GH 13 Habito
 12.5mm Gyproc GH 13 Habito
 45mm Ranka Gypsteel SLIM 45 / 40
 K400
 Kisko Gypsteel SLIM 45 / 62
 Kisko Gypsteel SLIM 45 / 62
 Ersite ISOVER Slim 2×45
 12.5mm Glasroc® X GRIX 13
 12.5mm Glasroc® X GRIX 13 total
 dim: 15.cm

D4 ROOM PARTITION

Gyproc Habito® SlimWall system
 12.5 mm Gyproc GH 13 Habito
 12.5mm Gyproc GH 13 Habito
 45mm Ranka Gypsteel SLIM 45 / 40 K400
 Kisko Gypsteel SLIM 45 / 62
 Kisko Gypsteel SLIM 45 / 62
 Ersite ISOVER Slim 2×45
 12.5mm Gyproc GH 13 Habito
 12.5mm Gyproc GH 13 Habito
 total dim : 15 cm

SCALE 1:10

SCALE 1:10

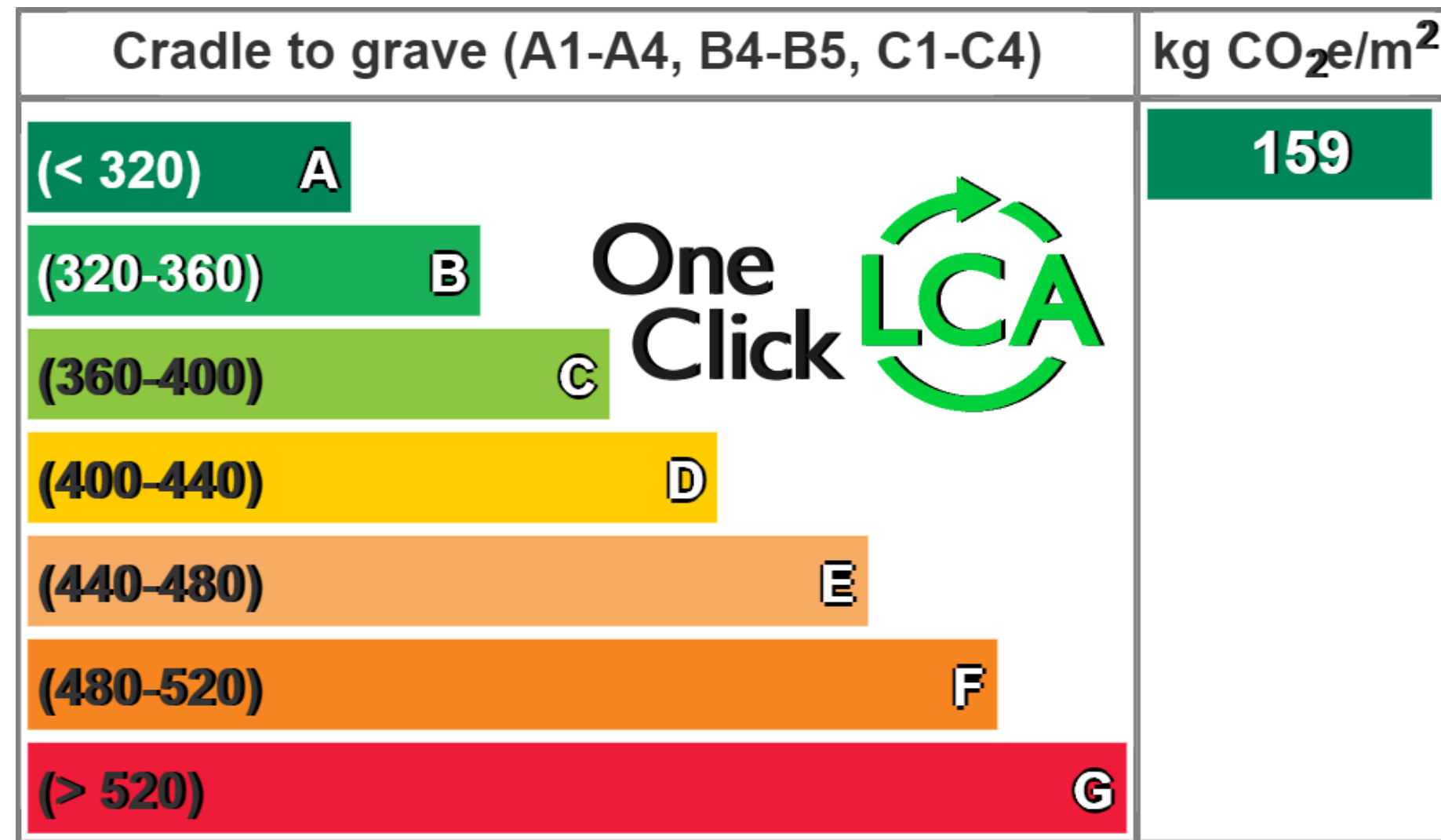


SCALE 1:5

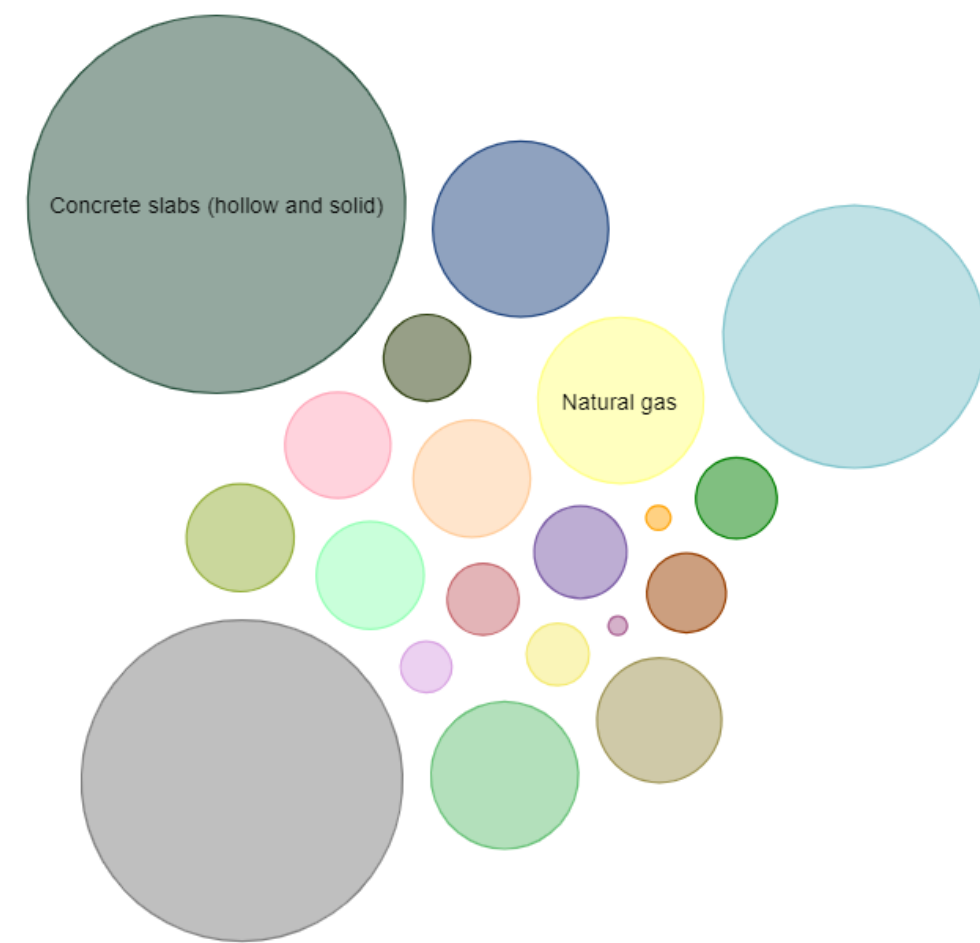
D3 EXTERIOR WALL: SerpoVent PREMIUM

Facade system
 Glasroc GTX9 18mm
 Weber SerpoVent Wall bracket,
 a wind protection surface, e.g. ISOVER OL-33
 Facade
 Weber SerpoVent Hat Profile
 Permabase plaster board
 SerpoVent Two-layer plaster or other facade material
 Thermal insulation: ISOVER EXTREME 31
 Air Barrier
 ISOVER ACOUSTIC 40 mm
 Gyproc Habito® GH13

BUILDING ANALYSIS



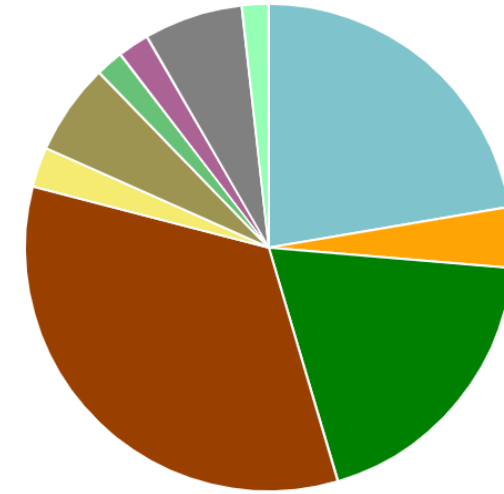
Bubble chart, total life-cycle impact by resource type and subtype, Global warming
 Hover your mouse over legends or the chart to highlight impacts. Bubble minimum and maximum sizes constrained for readability



- Ready-mix concrete for external walls and floors
- Acoustic insulation panels
- Glass wool insulation
- Ready-mix concrete for structures (beams, columns, piling)
- Ready-mix concrete for foundations and internal walls
- Concrete slabs (hollow and solid)
- Bitumen and other roofing
- Steel-framed glass doors
- Stone wool insulation
- Oil based fuels
- Cement
- Regular gypsum board
- Fibre cement products
- Electrification components and systems
- Leveling screeds (for floors)
- Plastic membranes
- Glass facades and glazing
- Aluminium frame windows
- Electricity
- Natural gas

Global warming kg CO₂e - Classifications

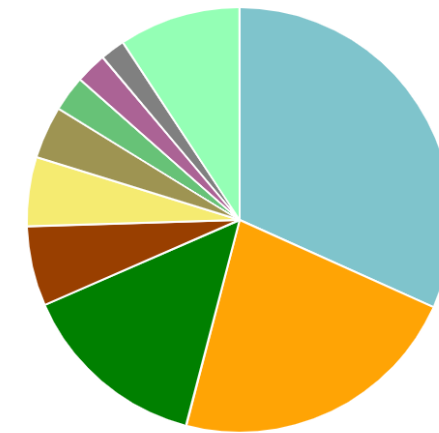
- 1.1 Foundations (substructure) - 22.3%
- 1.2.1 Frame (beams, columns and slabs) - 4.0%
- 1.2.3 External walls - 19.1%
- 1.3.1 Ground floor slab - 33.6%
- 1.3.2 Internal walls, partitions and doors - 2.6%
- 1.3.3 Stairs and ramps - 6.1%
- 1.4.2 Façade openings - 1.8%
- 1.5 Roof - 2.1%
- Fuel use - 6.5%
- Other classifications - 1.8%



Global warming kg CO₂e - Resource types

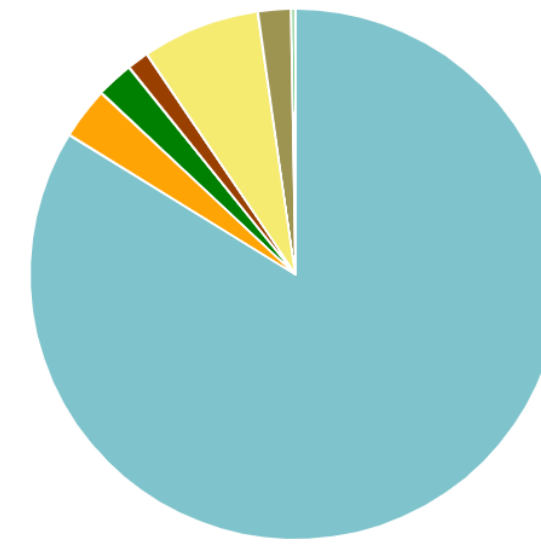
This is a drilldown chart. Click on the chart to view details

- Concrete slabs (hollow and solid) - 31.7%
- Ready-mix concrete for foundations and internal walls - 22.3%
- Ready-mix concrete for external walls and floors - 14.4%
- Glass facades and glazing - 6.1%
- Natural gas - 5.3%
- Ready-mix concrete for structures (beams, columns, piling) - 4.0%
- Fibre cement products - 2.7%
- Steel-framed glass doors - 2.4%
- Leveling screeds (for floors) - 1.9%
- Other resource types - 9.3%



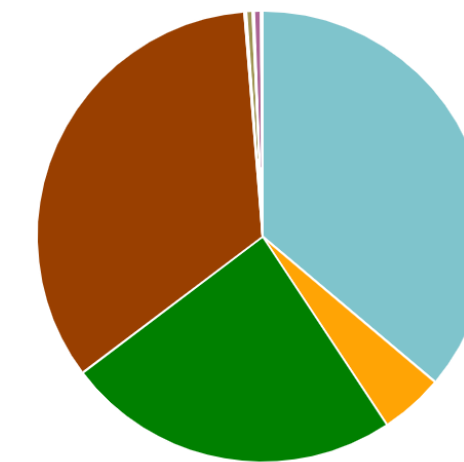
Global warming kg CO₂e - Life-cycle stages

- A1-A3 Materials - 83.8%
- A4 Transport - 3.2%
- A5 Construction - 2.3%
- B4-B5 Replacement - 1.3%
- B6 Energy - 7.2%
- C2 Waste transport - 2.0%
- C3 Waste processing - 0.3%
- C4 Waste disposal - 0.0%

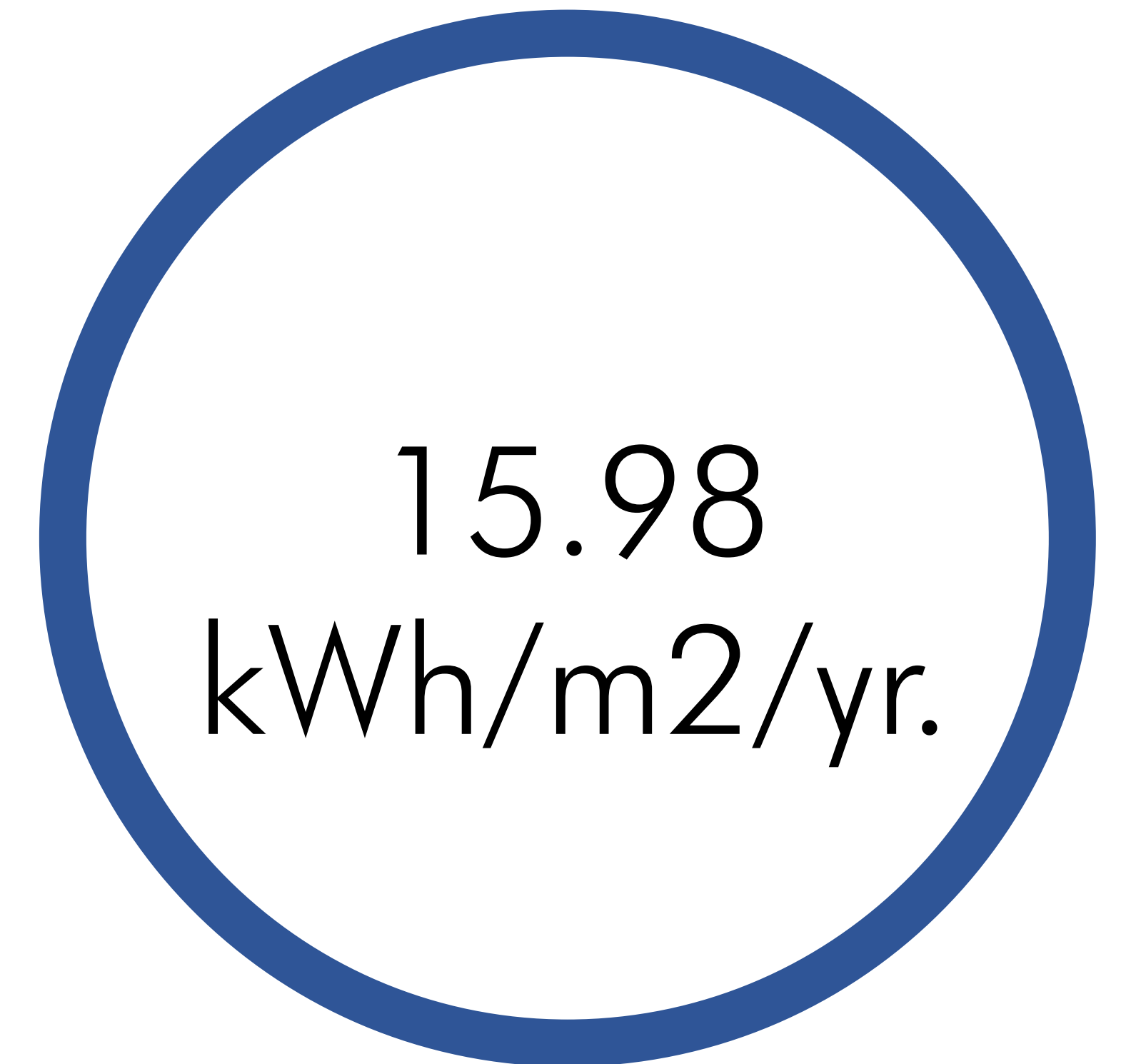


Mass kg - Classifications

- 1.1 Foundations (substructure) - 36.1%
- 1.2.1 Frame (beams, columns and slabs) - 4.6%
- 1.2.3 External walls - 24.0%
- 1.3.1 Ground floor slab - 34.0%
- 1.3.2 Internal walls, partitions and doors - 0.2%
- 1.3.3 Stairs and ramps - 0.4%
- 1.4.2 Façade openings - 0.1%
- 1.5 Roof - 0.5%
- 2.1.5 Floor coverings and finishes - 0.1%
- 2.3.3 Electricity generation and distribution - 0.0%



EUI



Sankey diagram, Global warming

