



ARCHITECTURE STUDENT CONTEST

18th INTERNATIONAL EDITION, LISBON 2023



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Architecture

Laura Lichtblau

M. Eng.
Sustainable Structures





COROA VERDE
THE GREEN CROWN



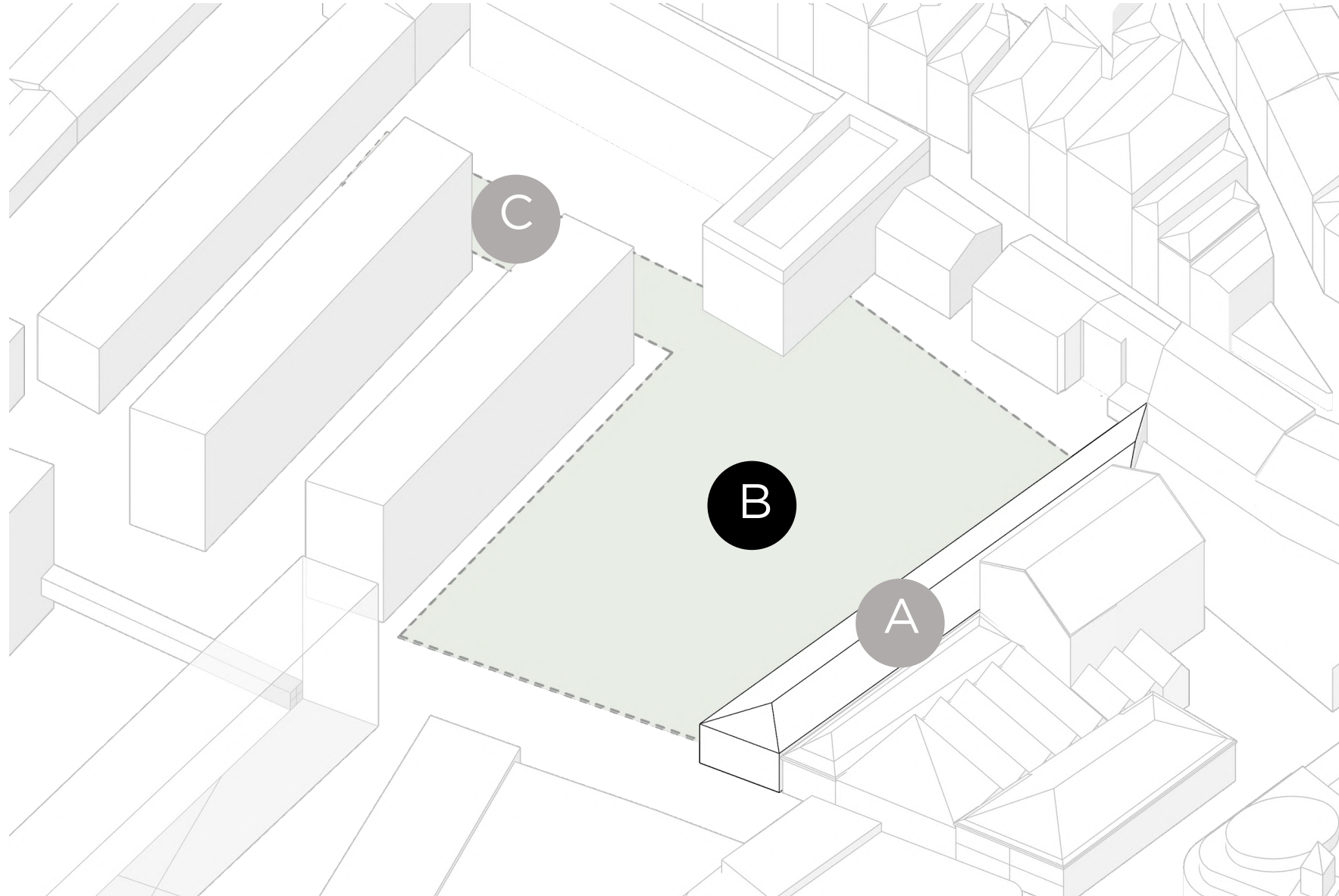


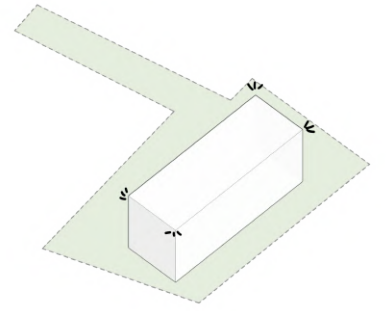
URBAN CONTEXT

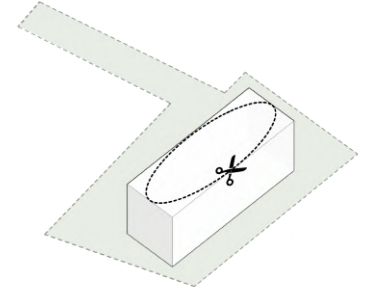


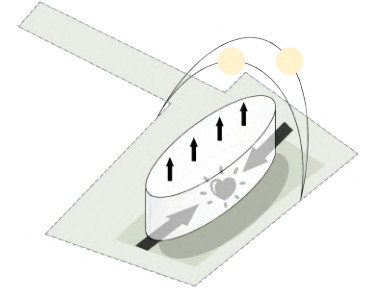


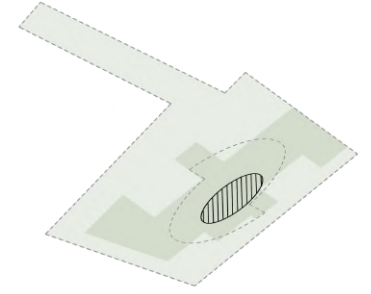
BUILDING B

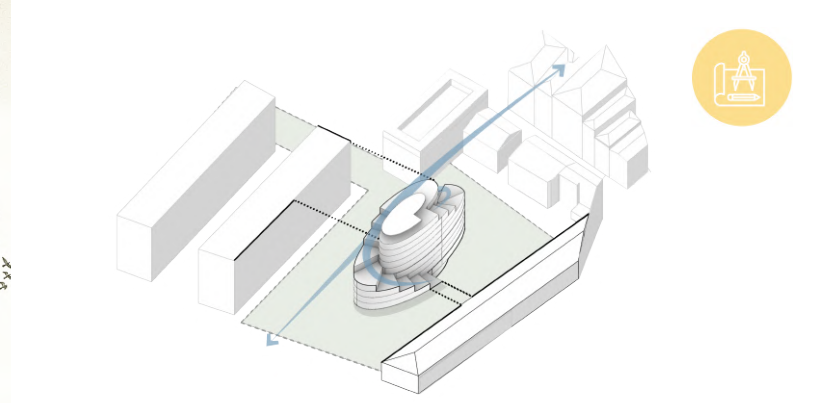






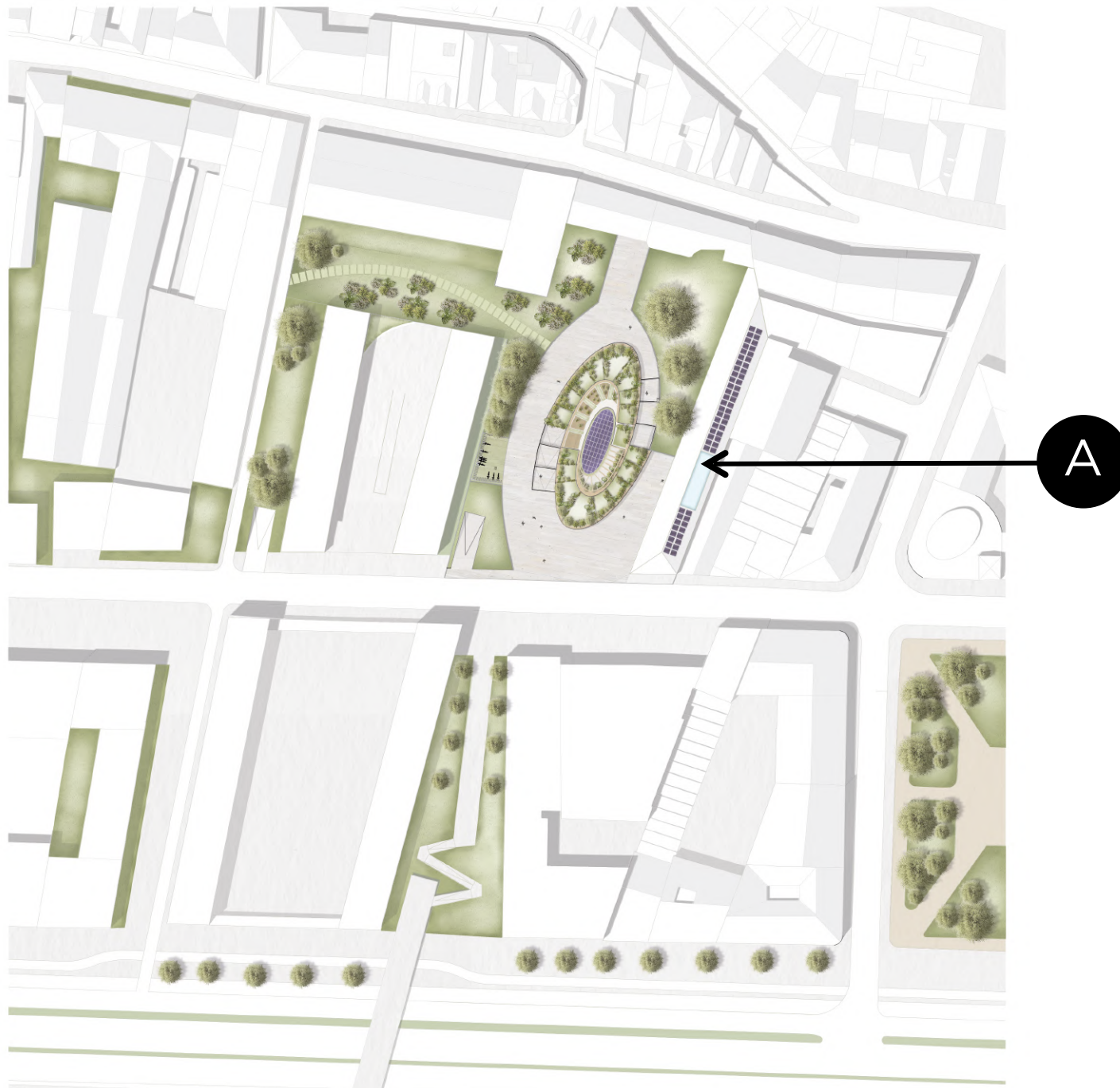


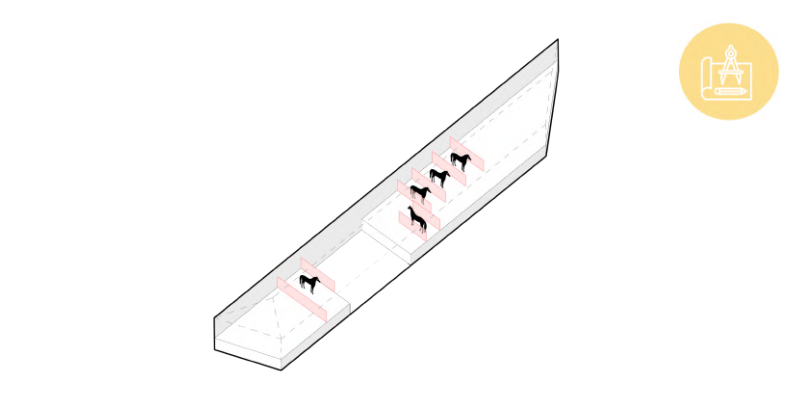


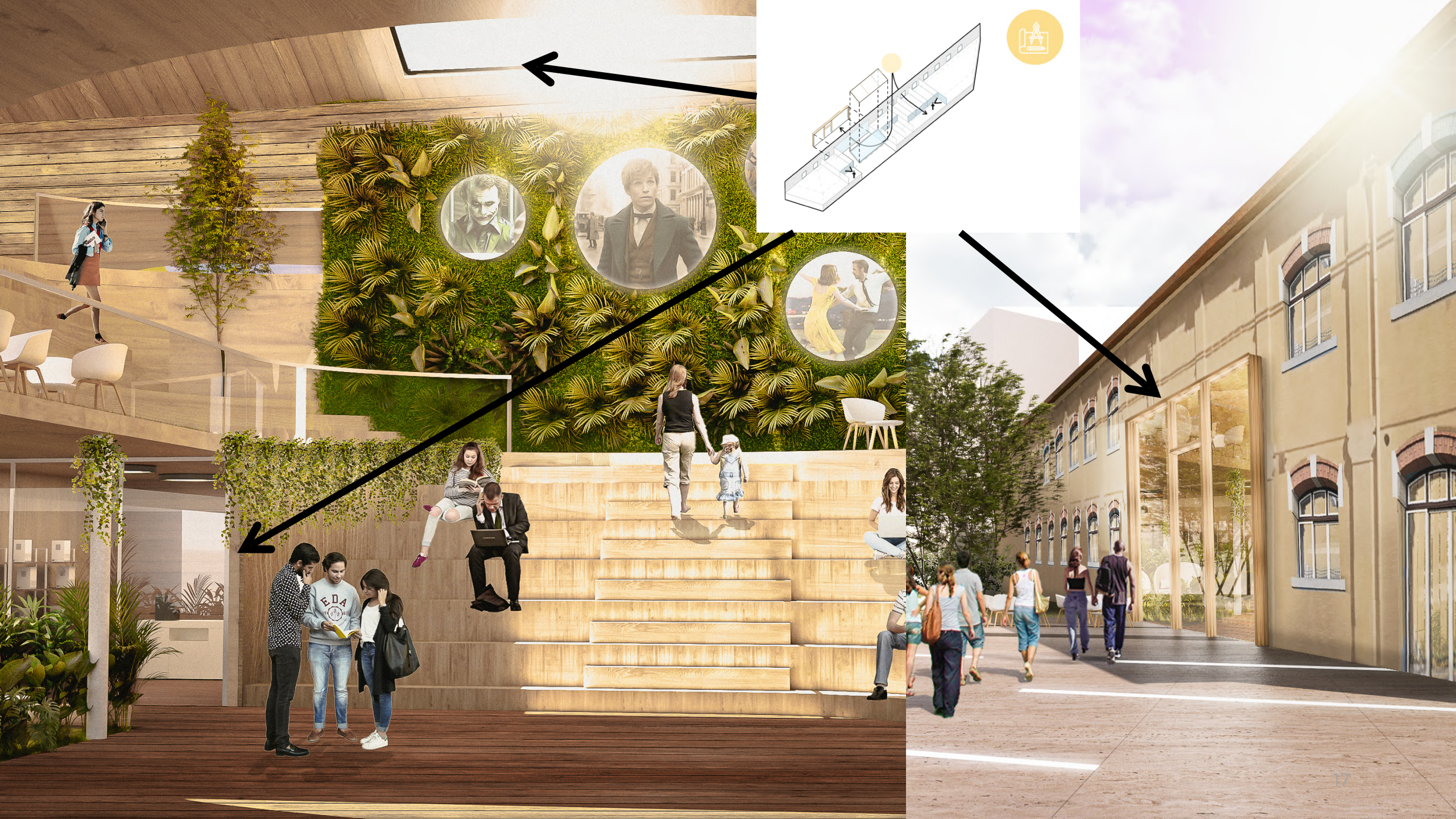


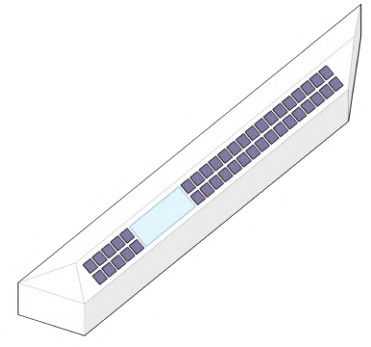






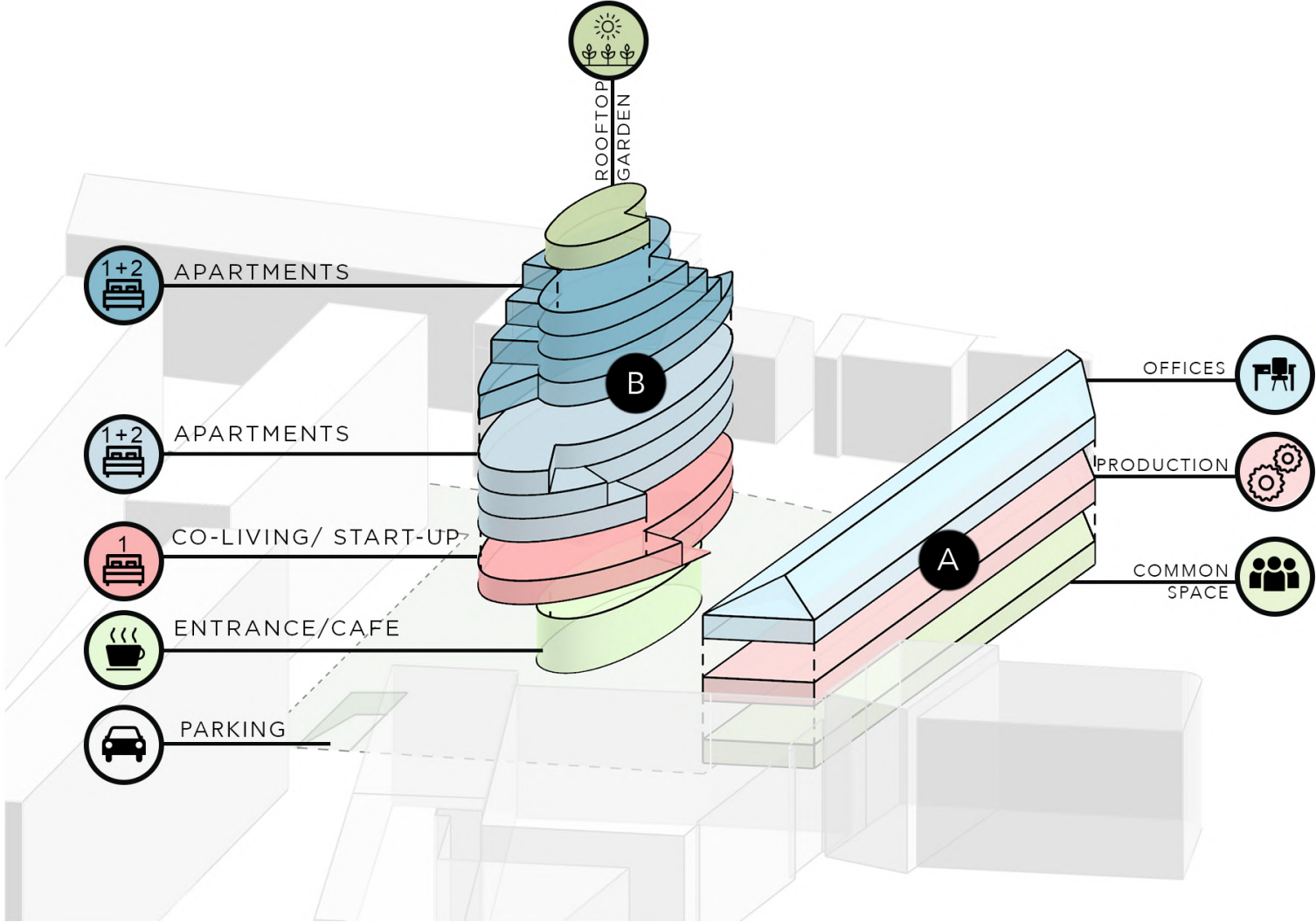








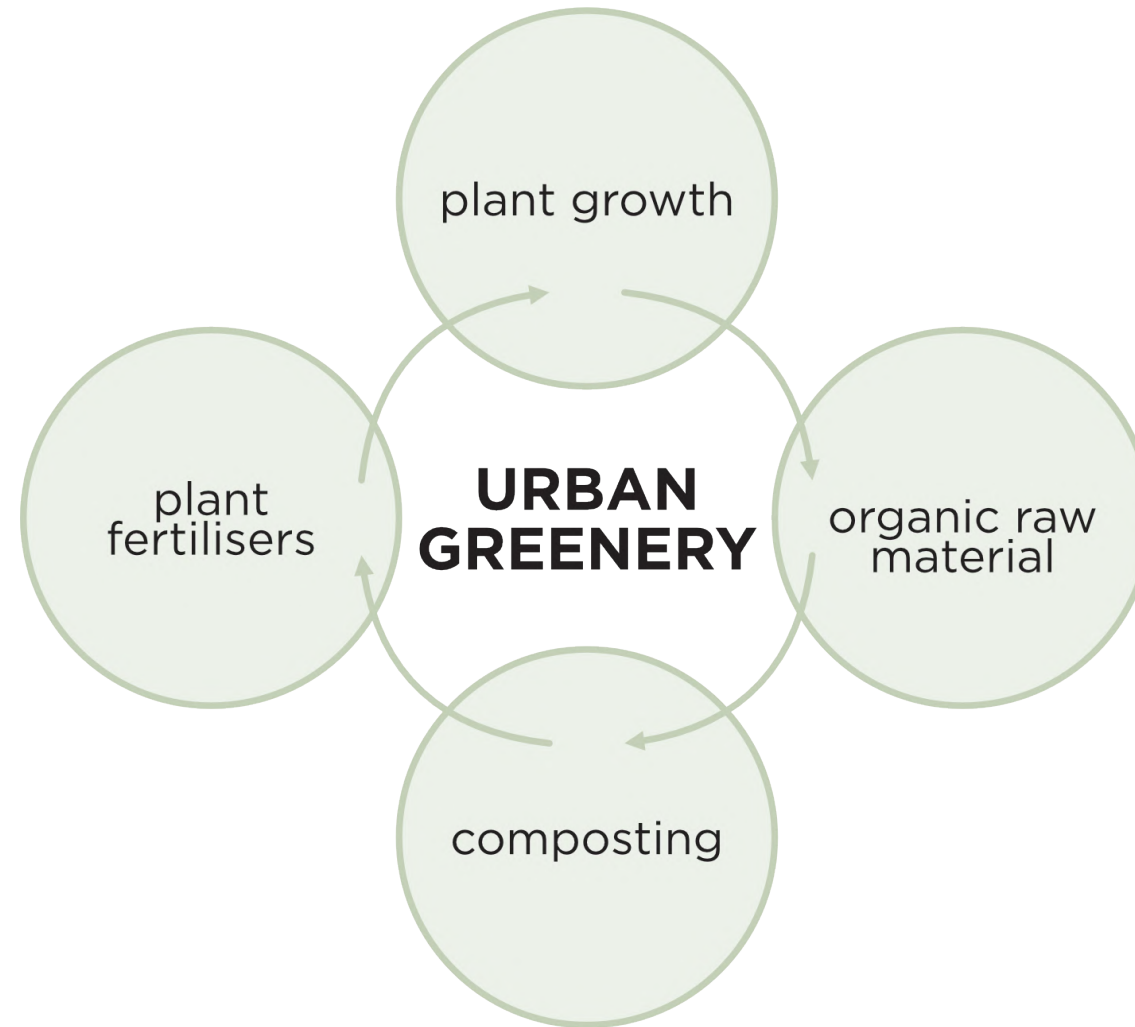
BUILDING ORGANIZATION





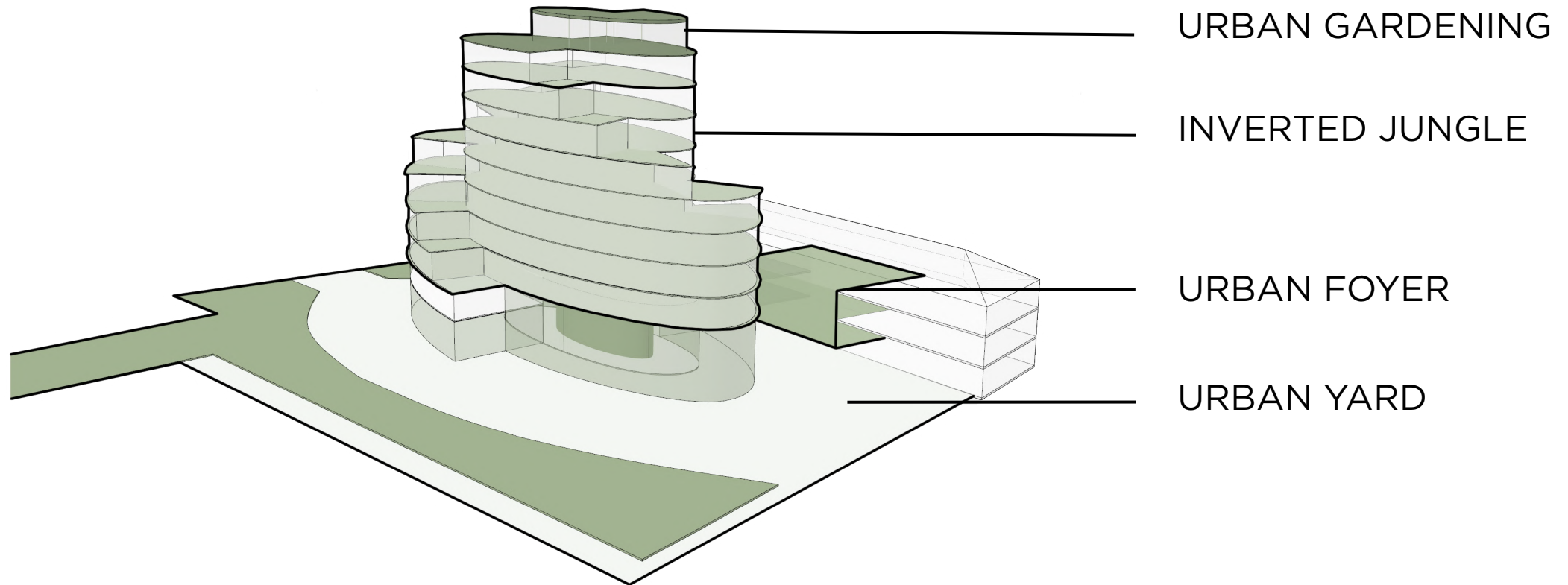


VEGETATIONAL CYCLE



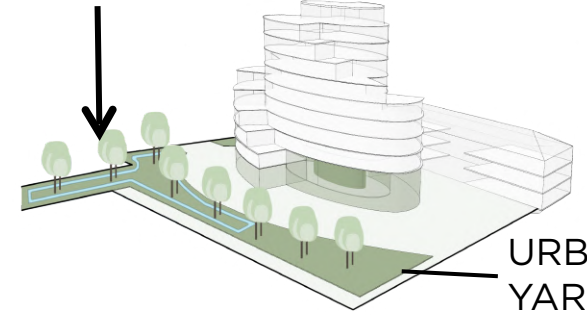


GREEN AREAS



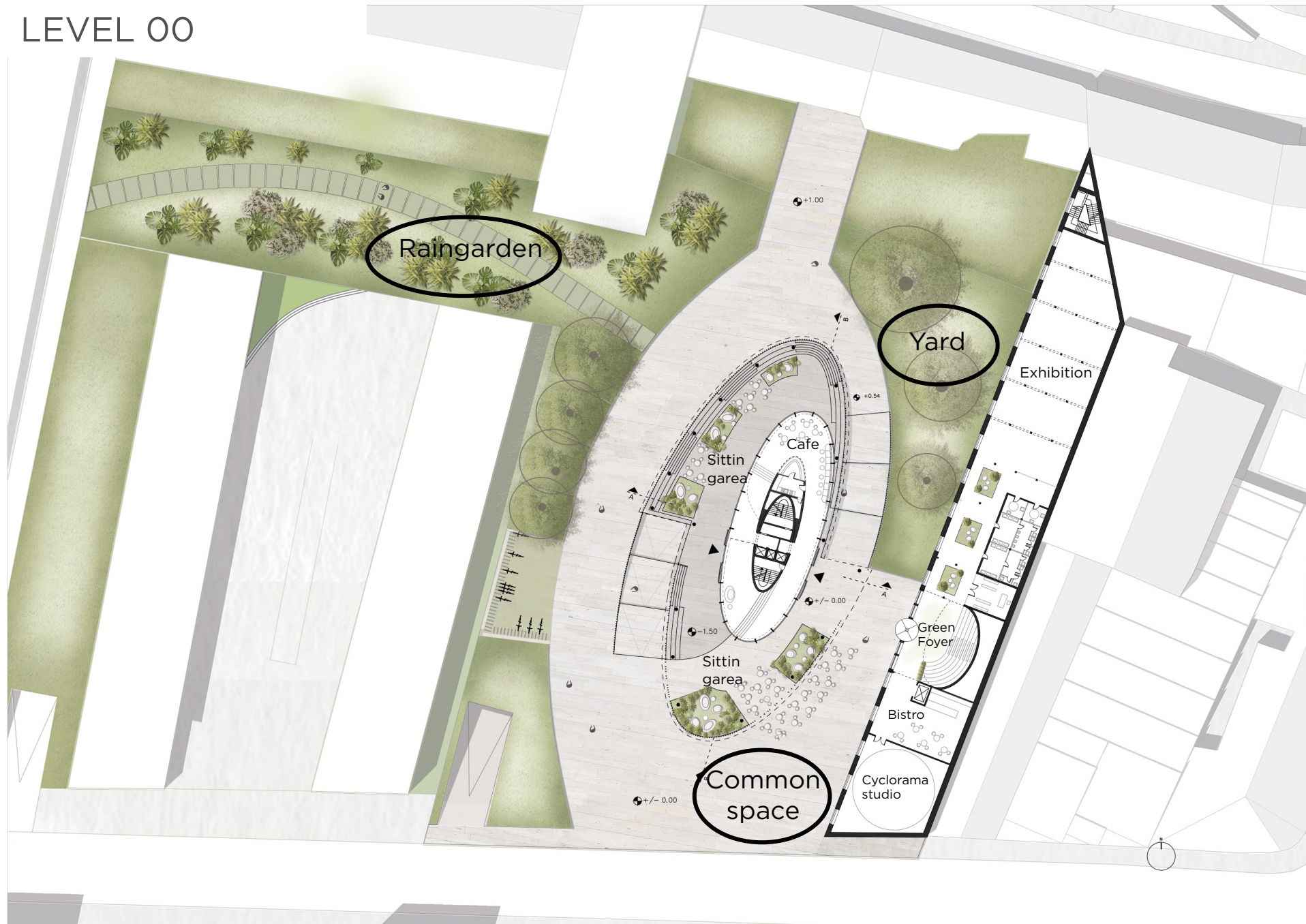


RAINGARDEN

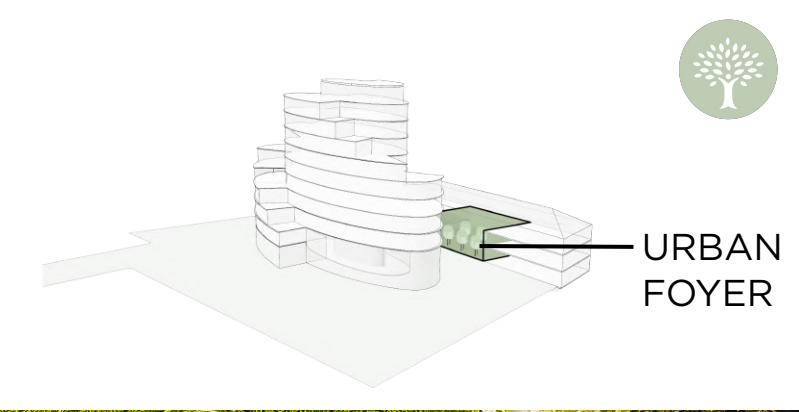




LEVEL 00





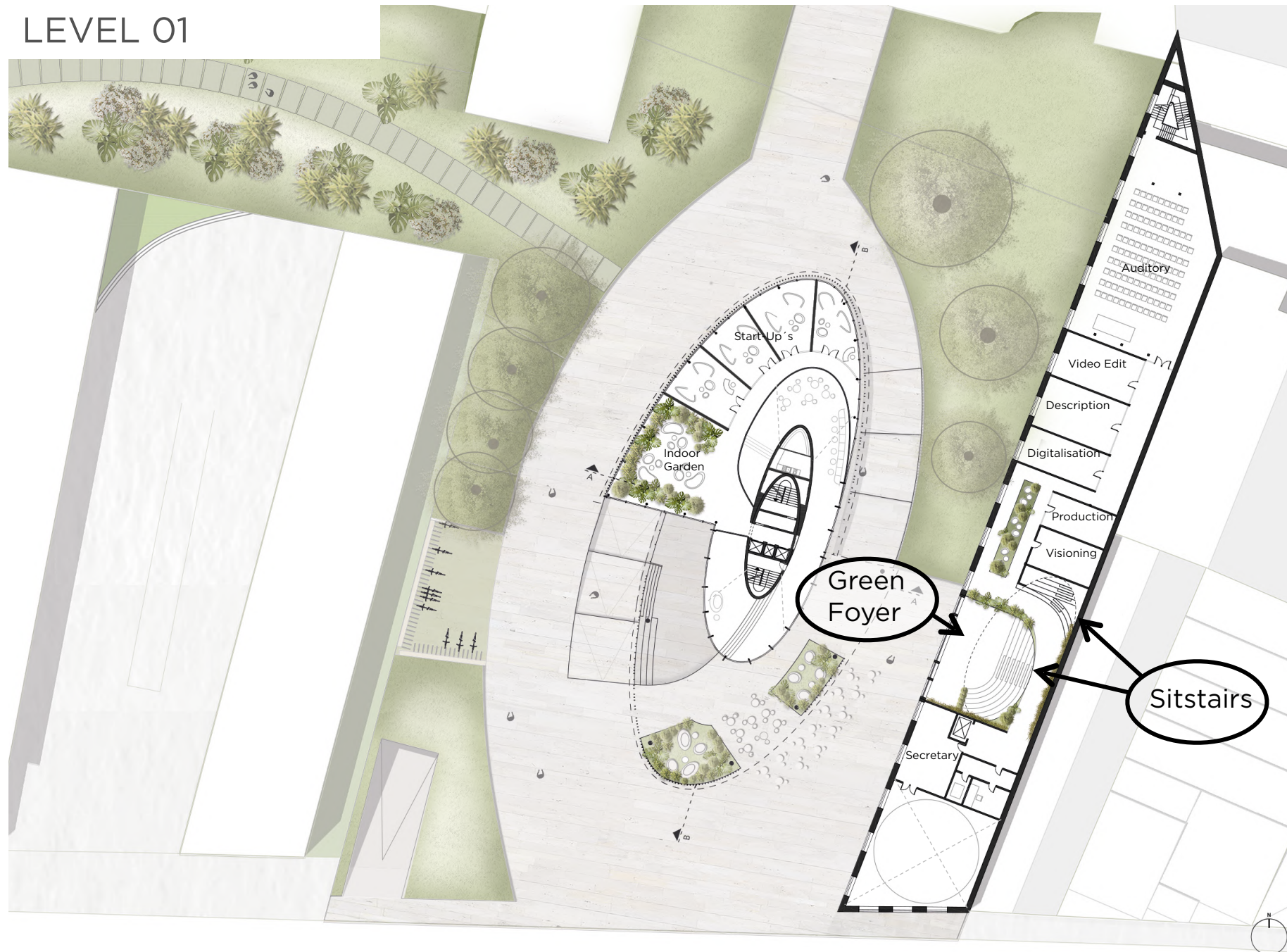


URBAN
FOYER





LEVEL 01

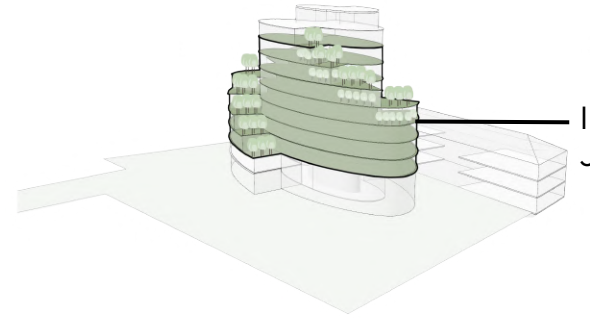




URBAN
FOYER

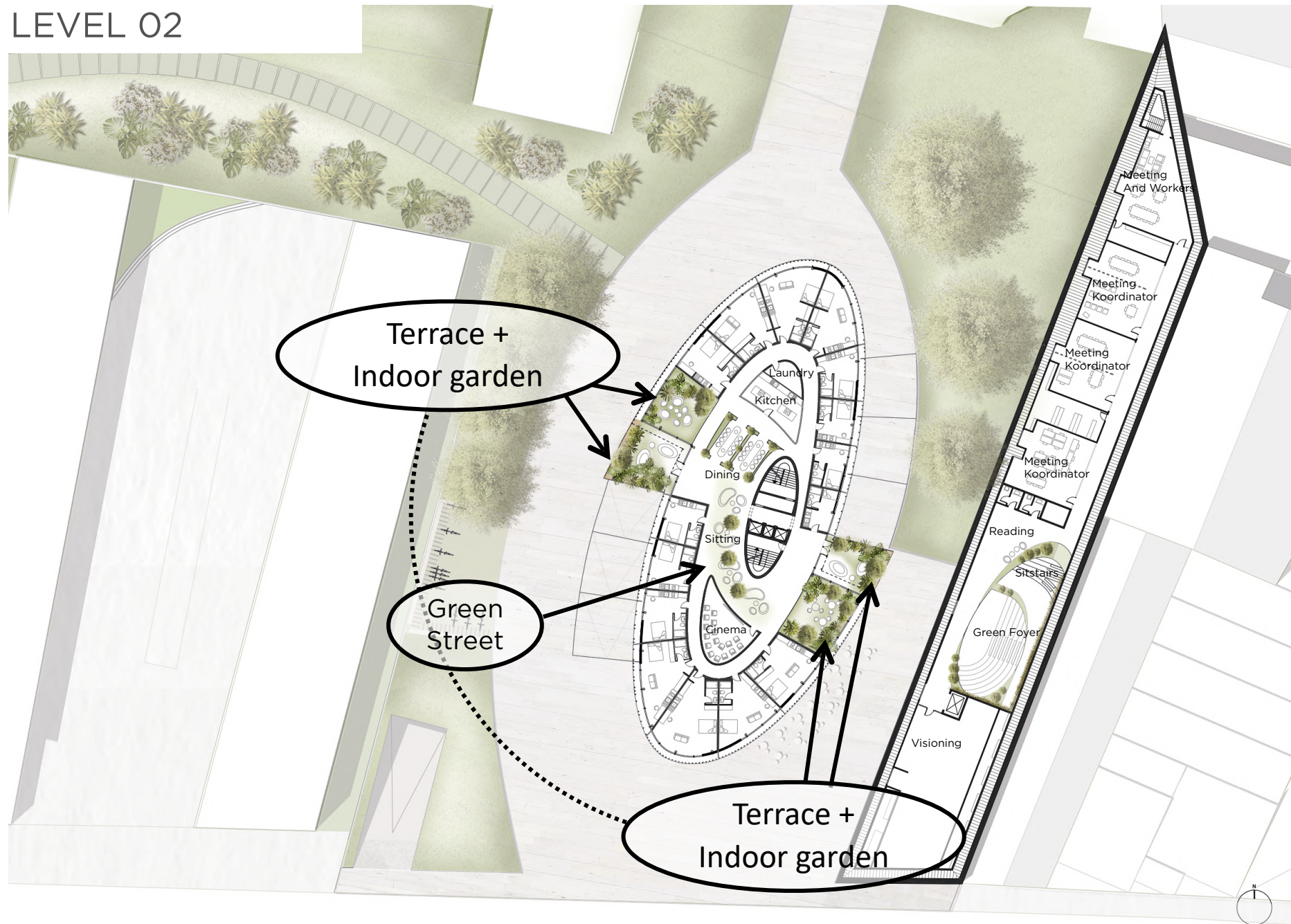


INVERTED
JUNGLE





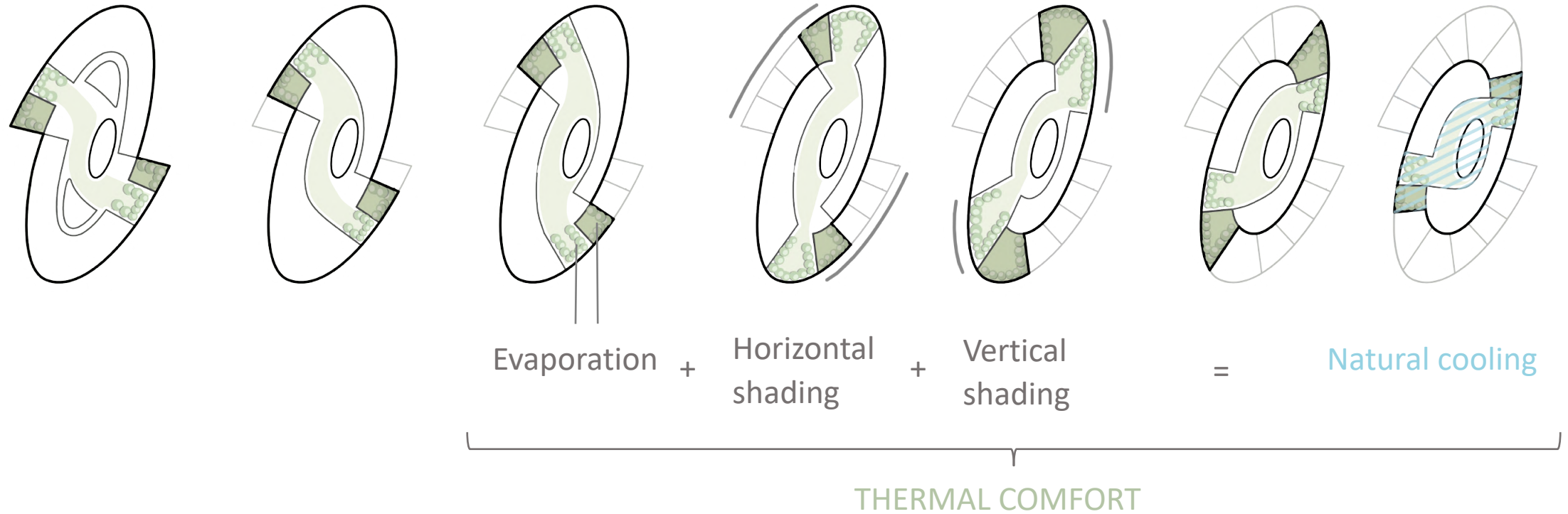
LEVEL 02





INVERTED JUNGLE

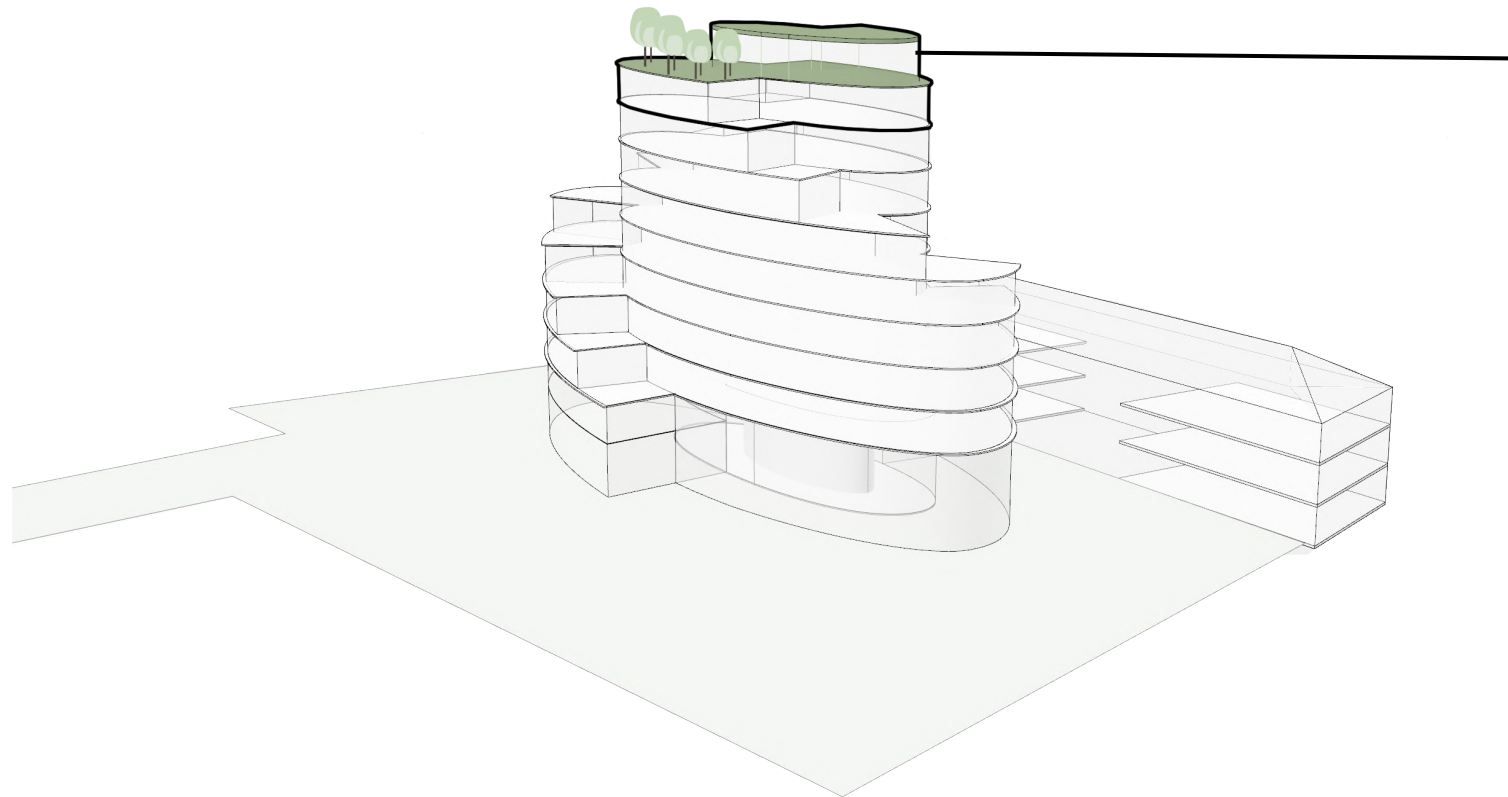
PASSIVE HEAT PROTECTION:



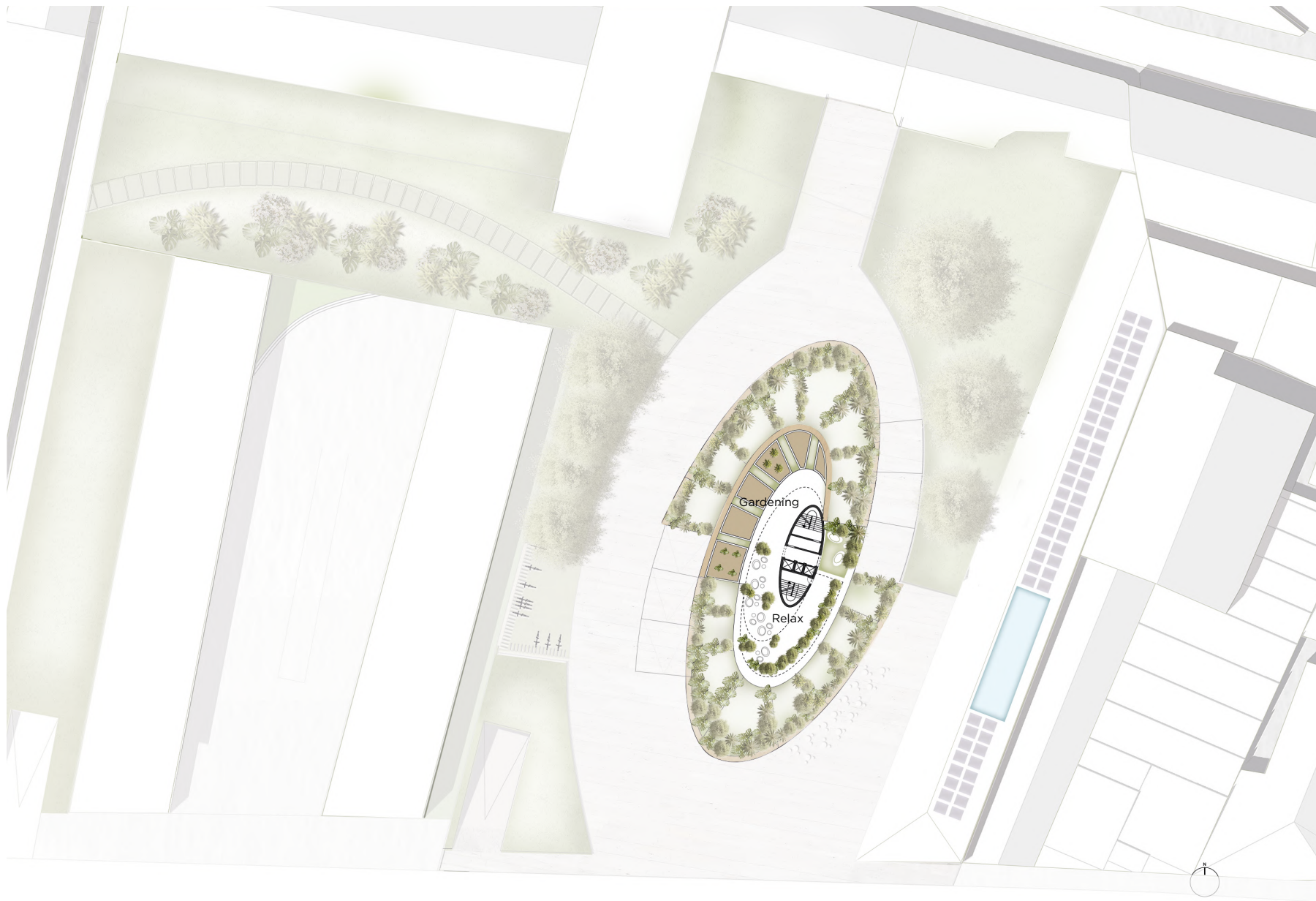




URBAN GARDENING



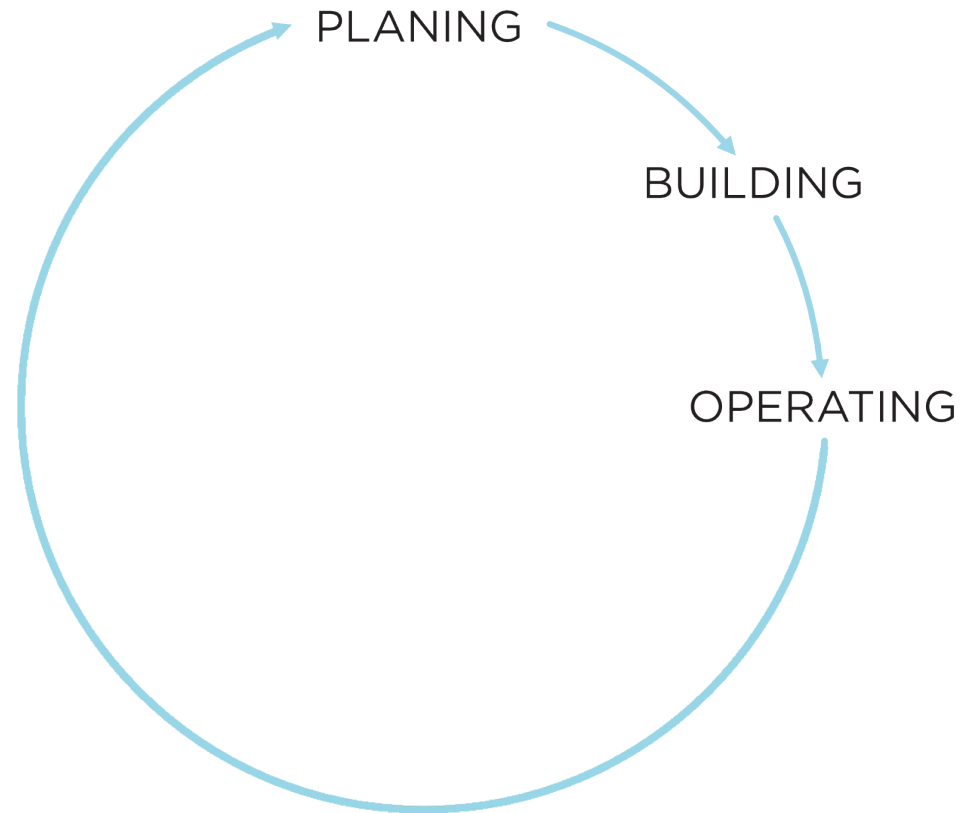
URBAN GARDENING





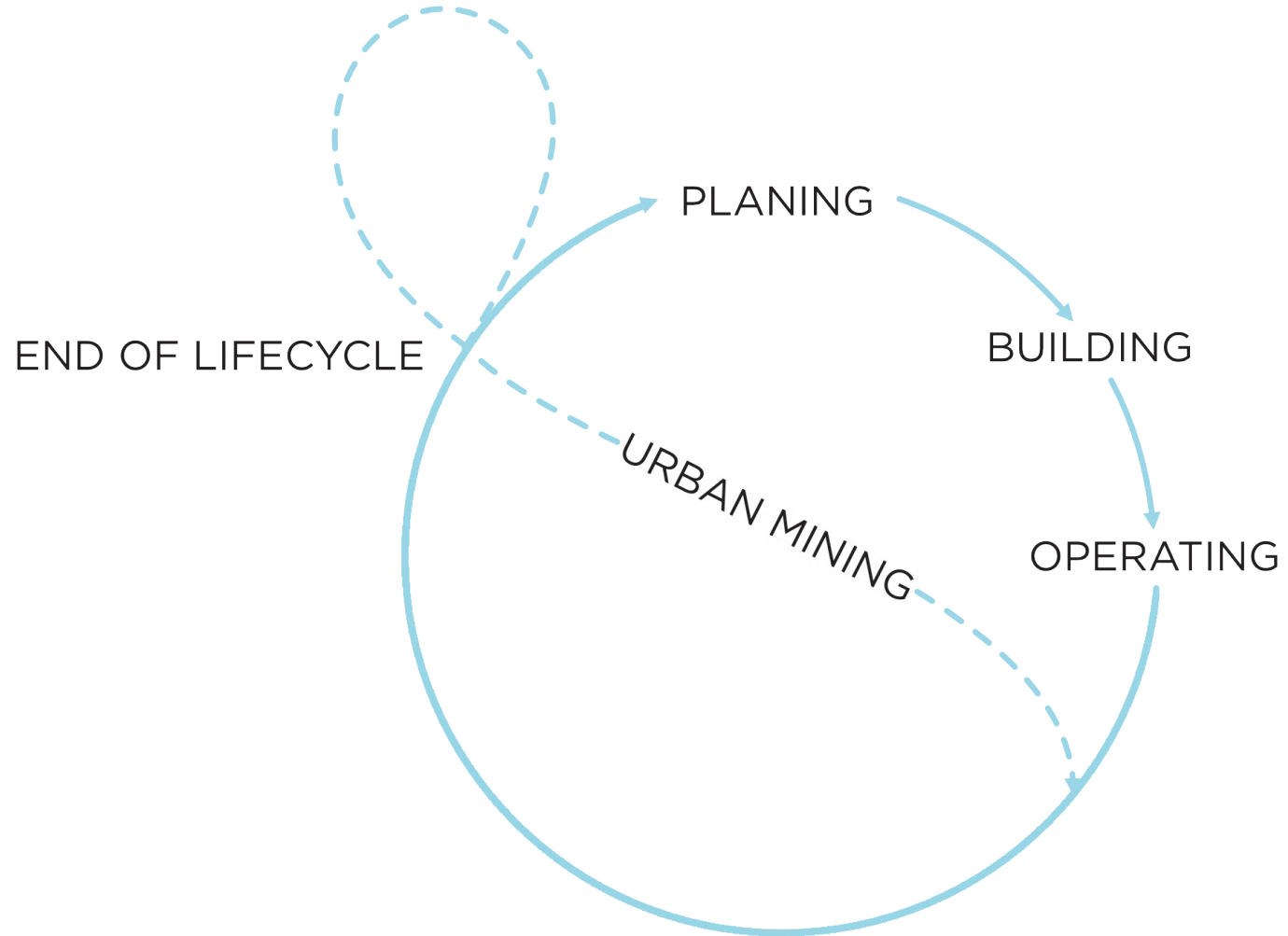


REFURBISHMENT



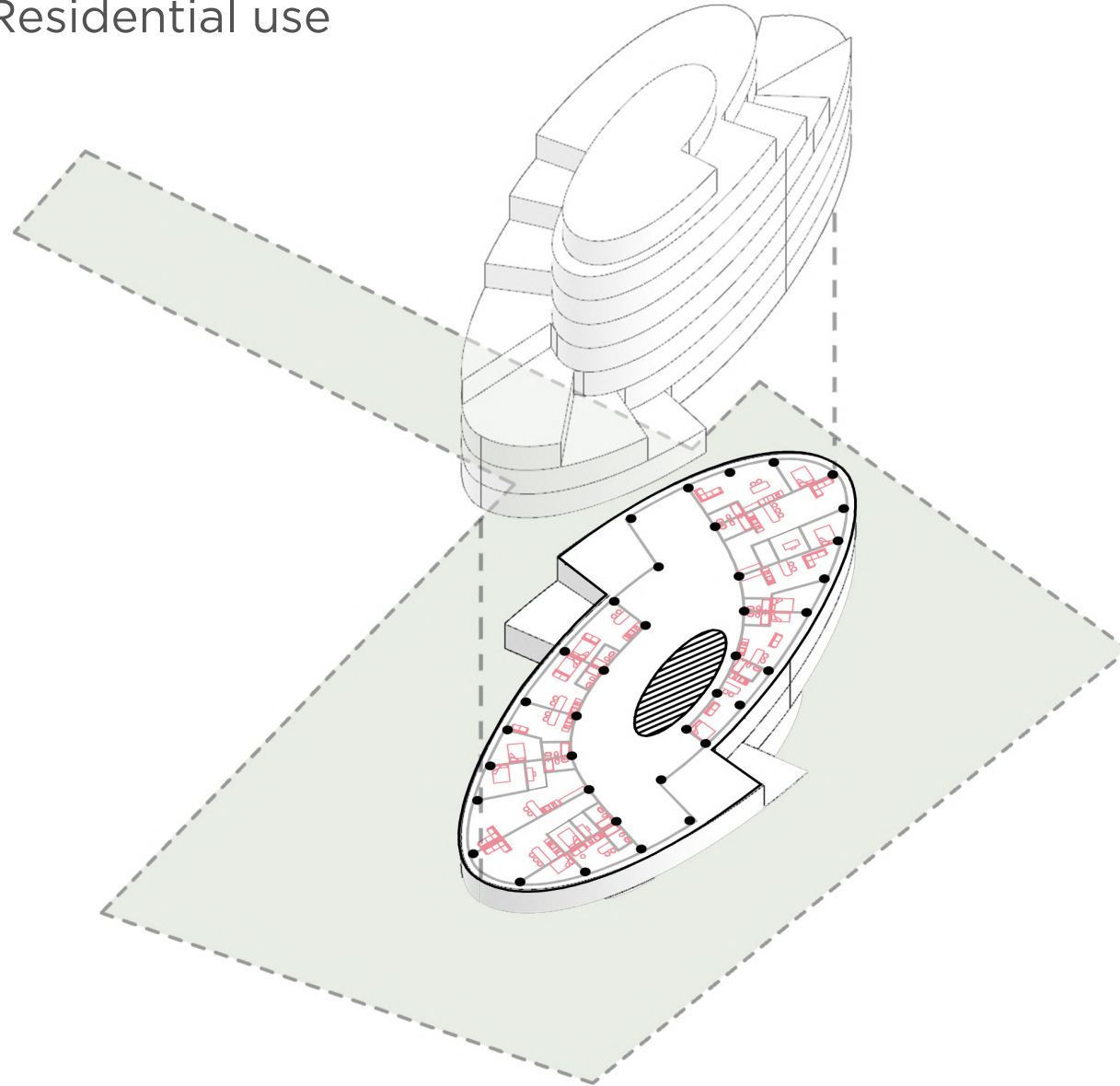


REUSE



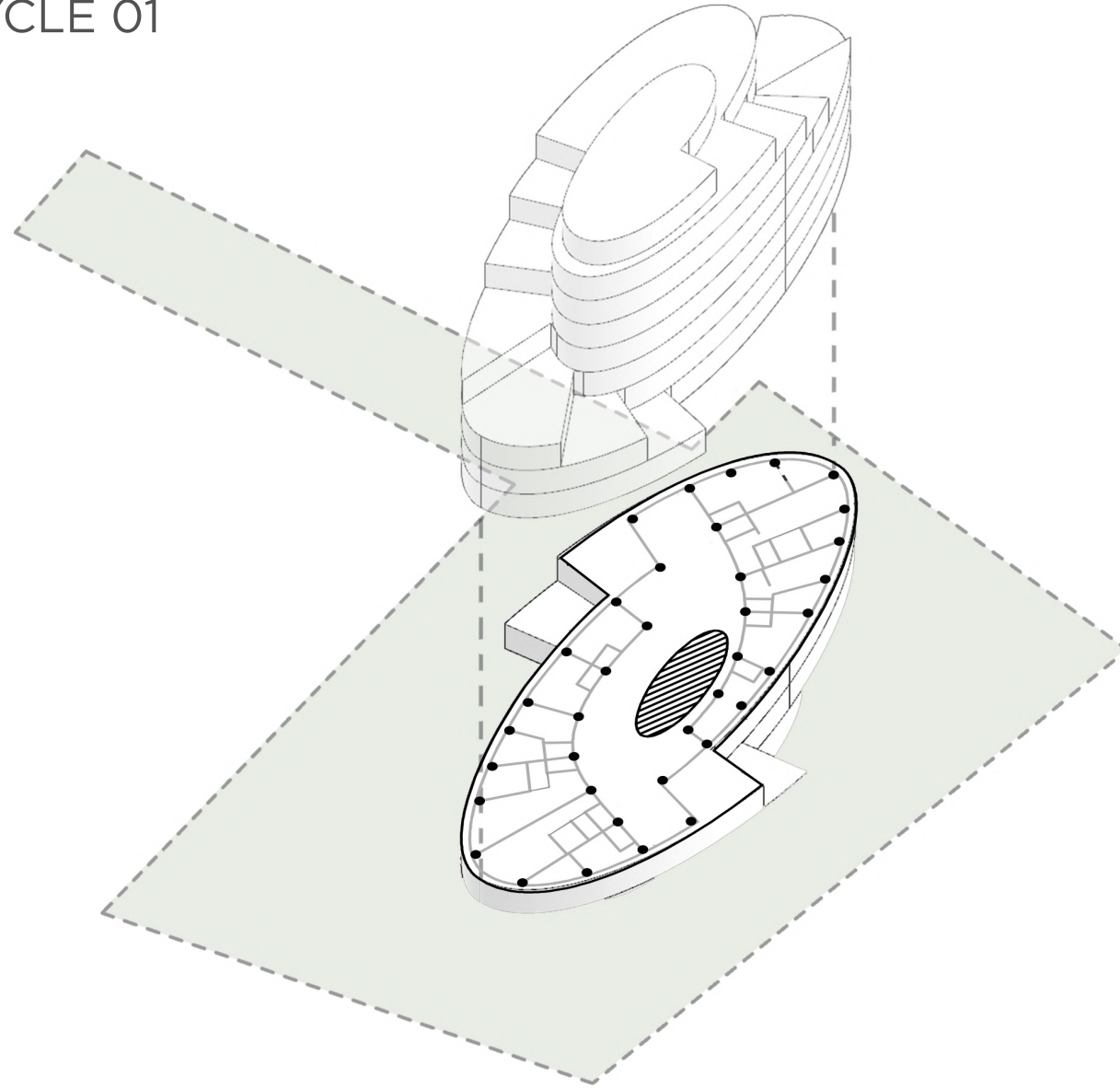


LIFECYCLE 01: Residential use



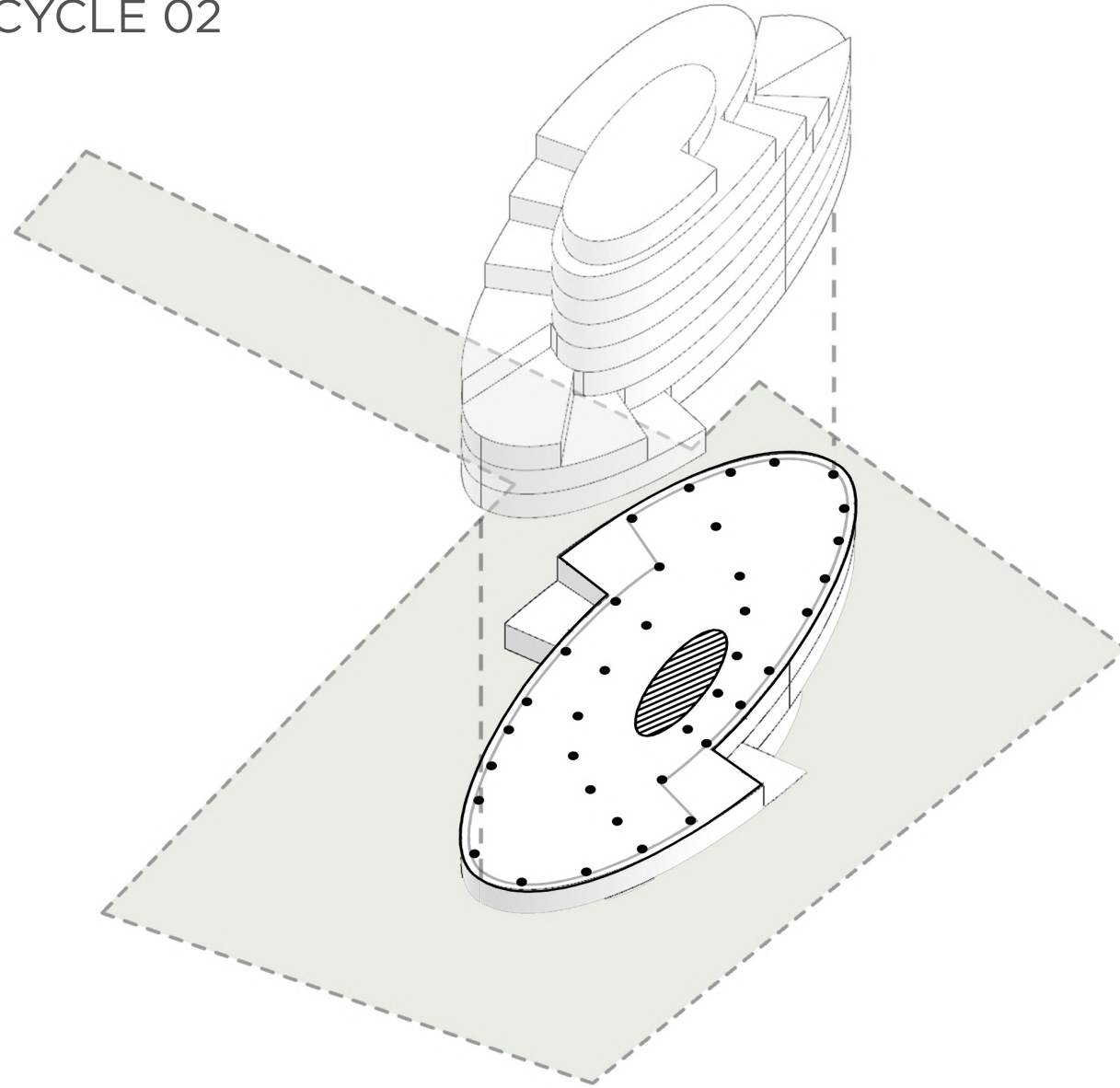


END OF LIFECYCLE 01



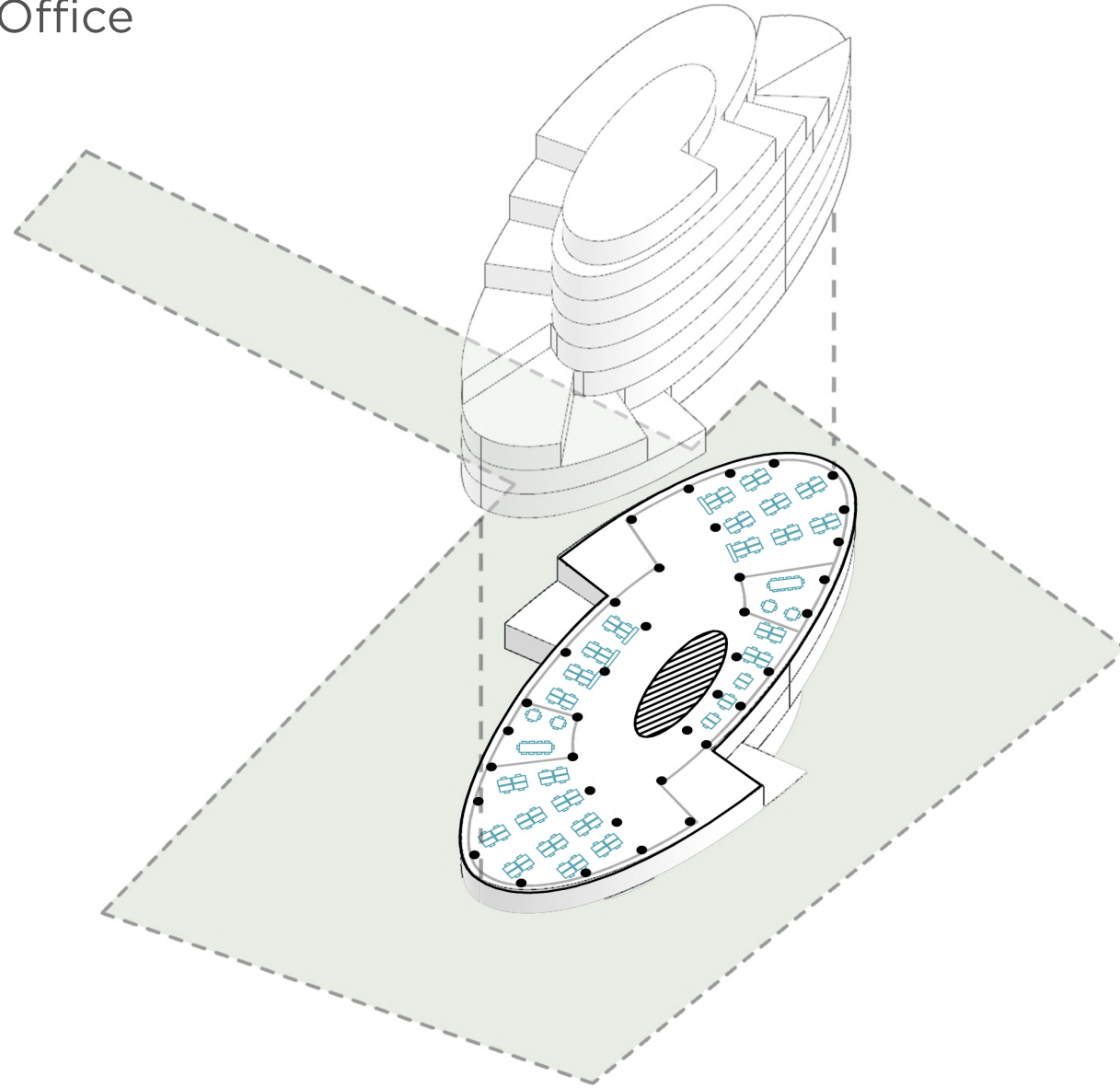


START OF LIFECYCLE 02



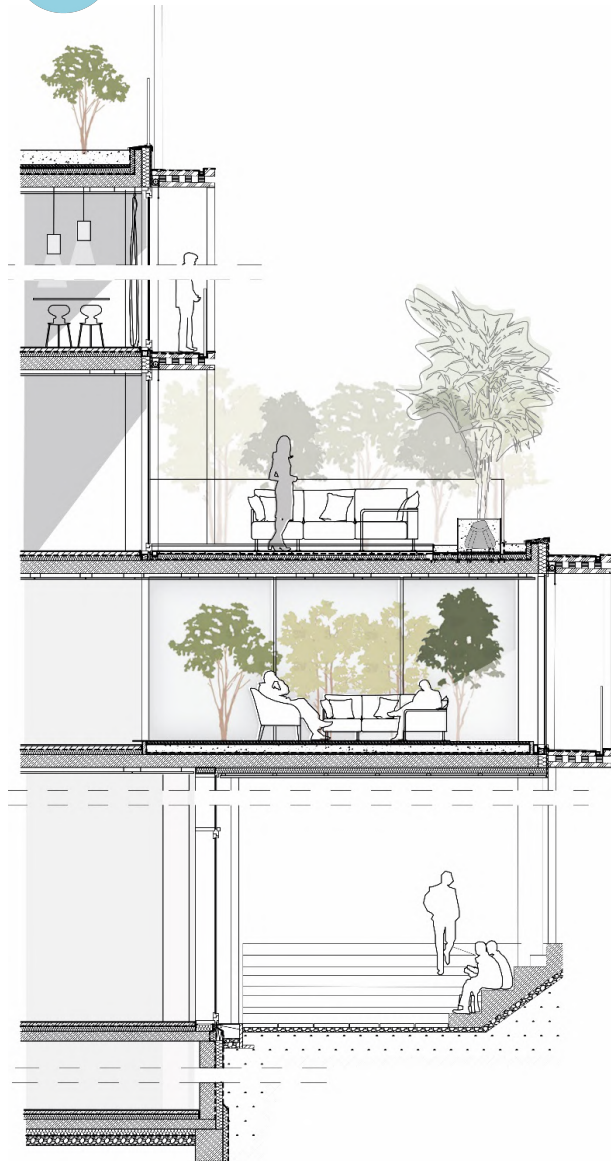


LIFECYCLE 02: Office





CONSTRUCTION



ROOF CONSTRUCTION:

reinforced concrete	250	mm
vapour barrier	1	mm
Isover Metac DSB		
insulation	240	mm
Isover Metac FLP 2 Duratec		
water barrier	5	mm
Isover Vario XtraSafe		
soil	100	mm

extensive roof greening
solar panel
 Megasol

U value **0,15 W/m²K**

WALL CONSTRUCTION:

plasterboard	12,5	mm
plasterboard	12,5	mm
Rigidur H		
vapour barrier	1	mm
insulation	240	mm
weather barrier	1	mm
wood slats	30	mm
mounting solar panel	55	mm
solar panel	9	mm
Megasol FAST		

U value **0,15 W/m²K**

MULLION-TRANSOM FACADE:

wood mullion and transom
glas panes
 Saint Gobain ORAÉ

U_w value **0,90 W/m²K**

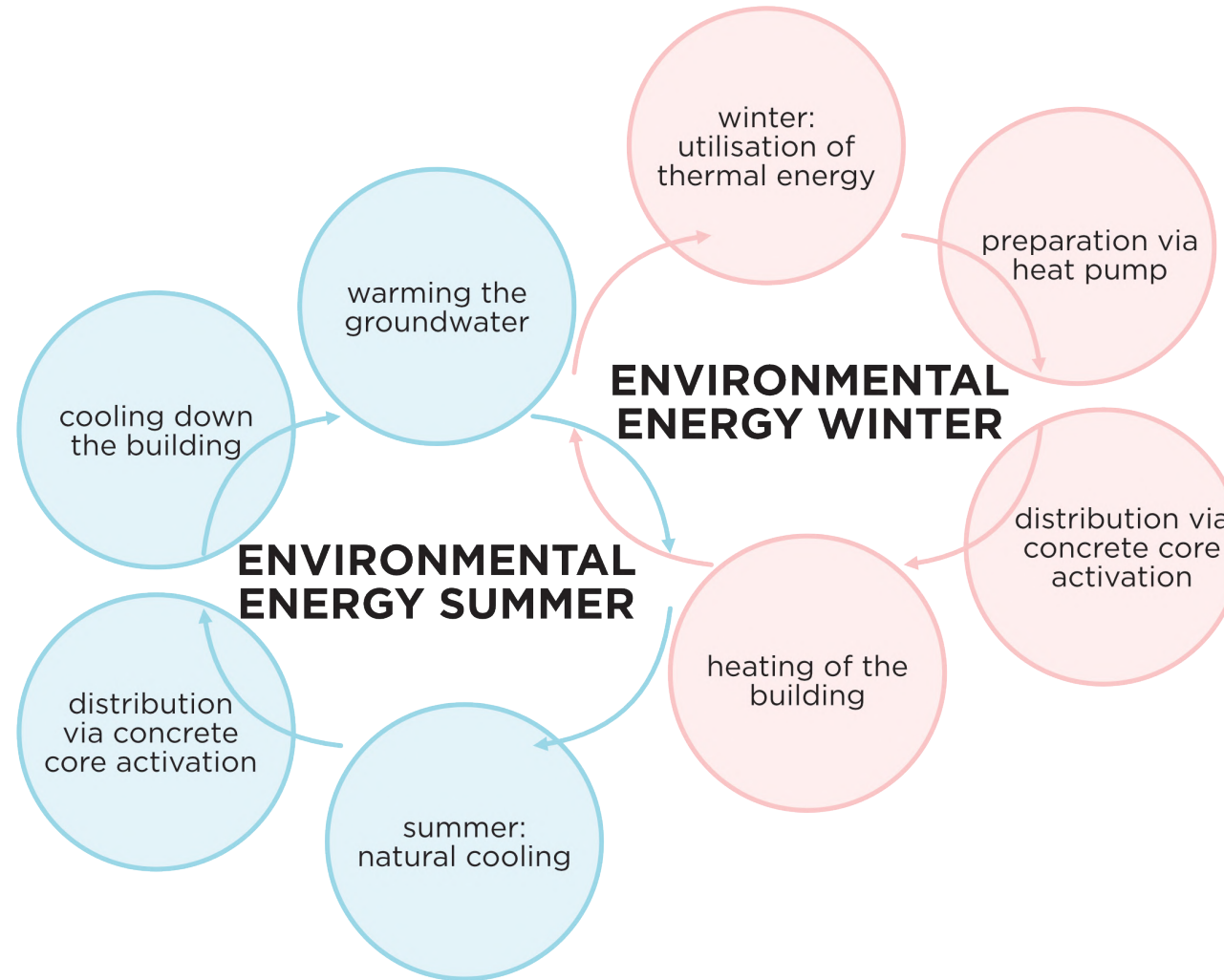
CEILING CONSTRUCTION:

flooring	1,5	mm
dry screed	25	mm
insulation	40	mm
Rigidur - screed element		
water barrier	5	mm
Reinforced concrete	250	mm
Insulation	120	mm
Topdec Hardline		

U value **0,20 W/m²K**









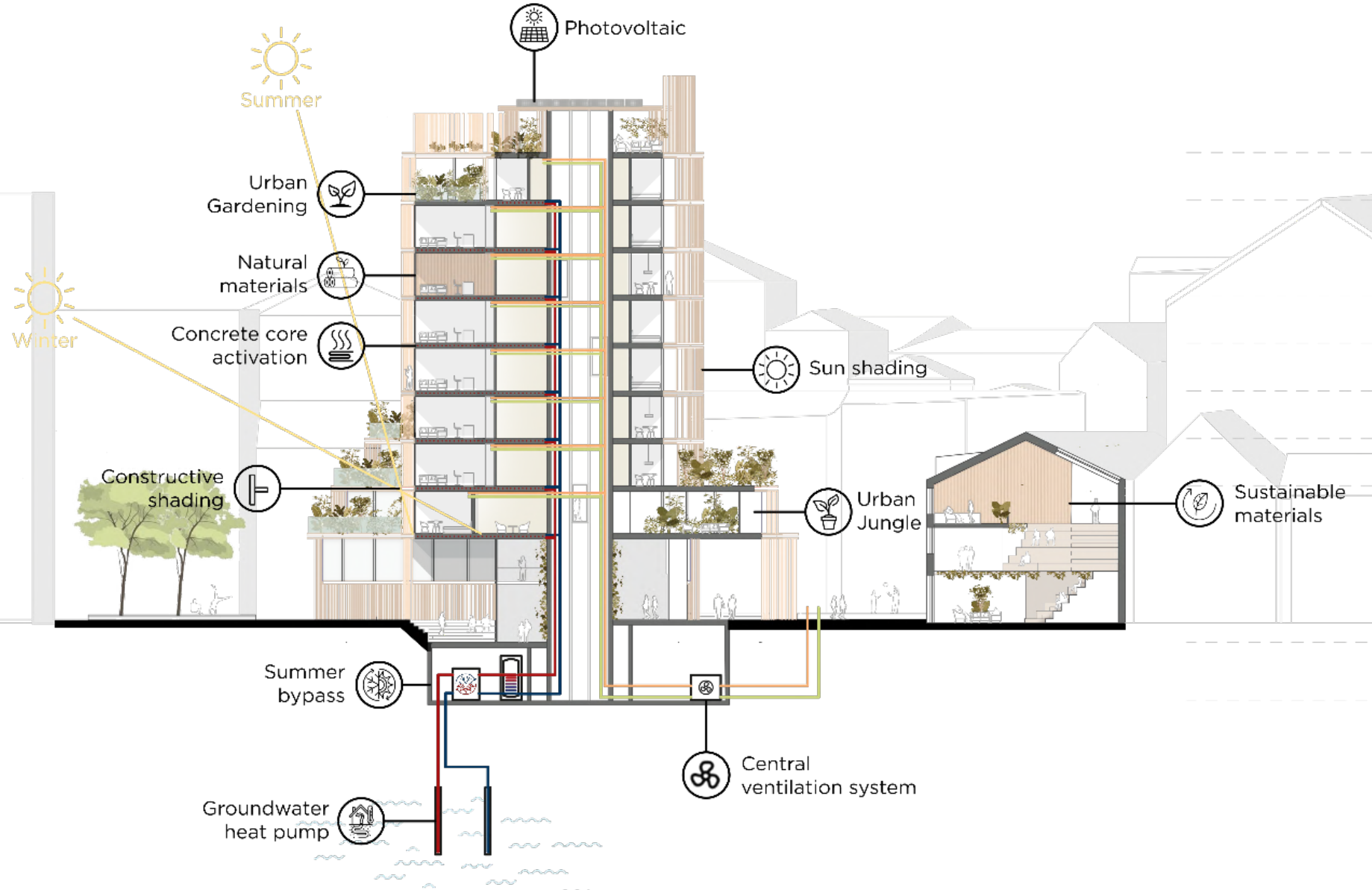
PLANT ENGINEERING

ENERGY PARAMETERS:
Buildings A + B

Heating demand:
10 kWh/(m²a)

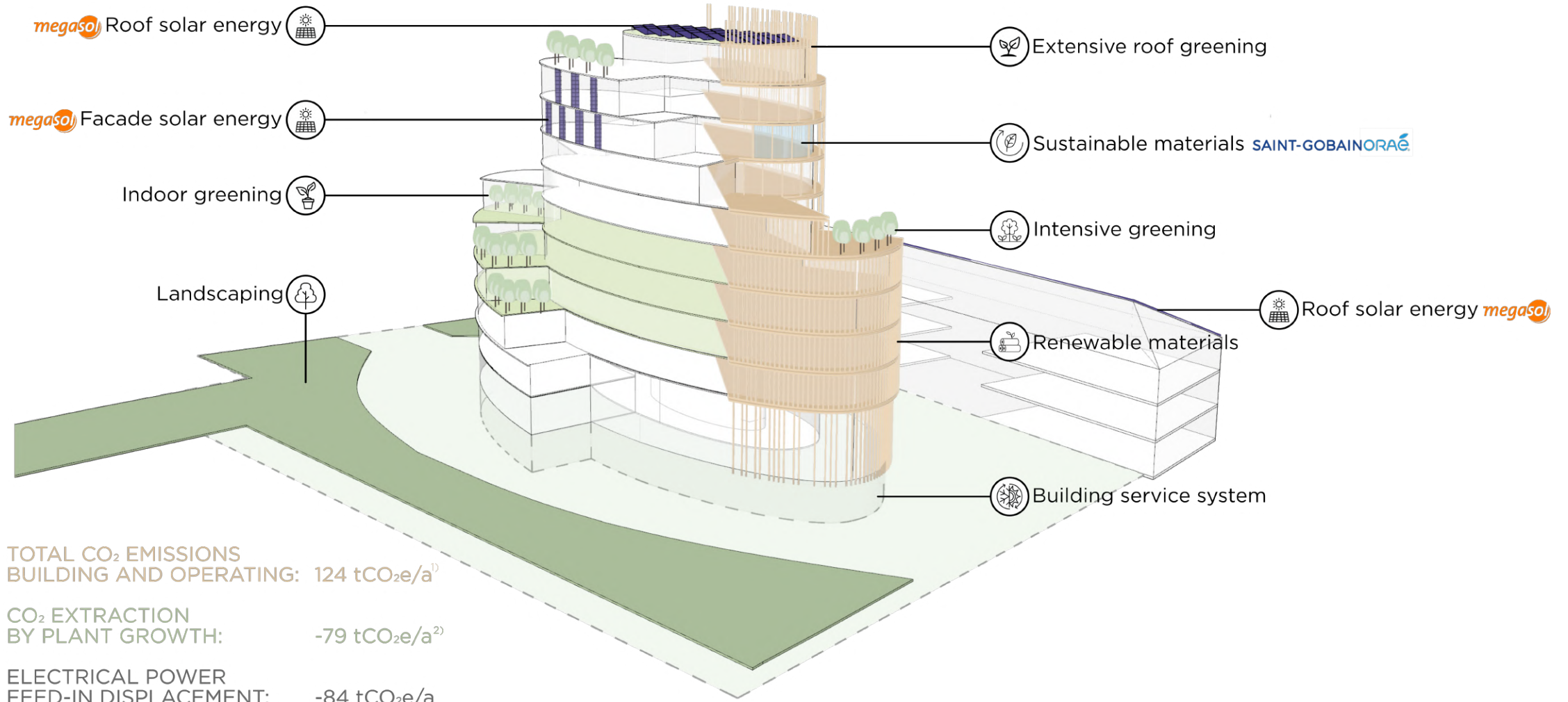
Cooling demand:
3 kWh/(m²a)

Temperature above 25°C:
< 3,3 %





LIFE CYCLE ASSESMENT



TOTAL CO₂ EMISSIONS
BUILDING AND OPERATING: 124 tCO₂e/a¹⁾

CO₂ EXTRACTION
BY PLANT GROWTH: -79 tCO₂e/a²⁾

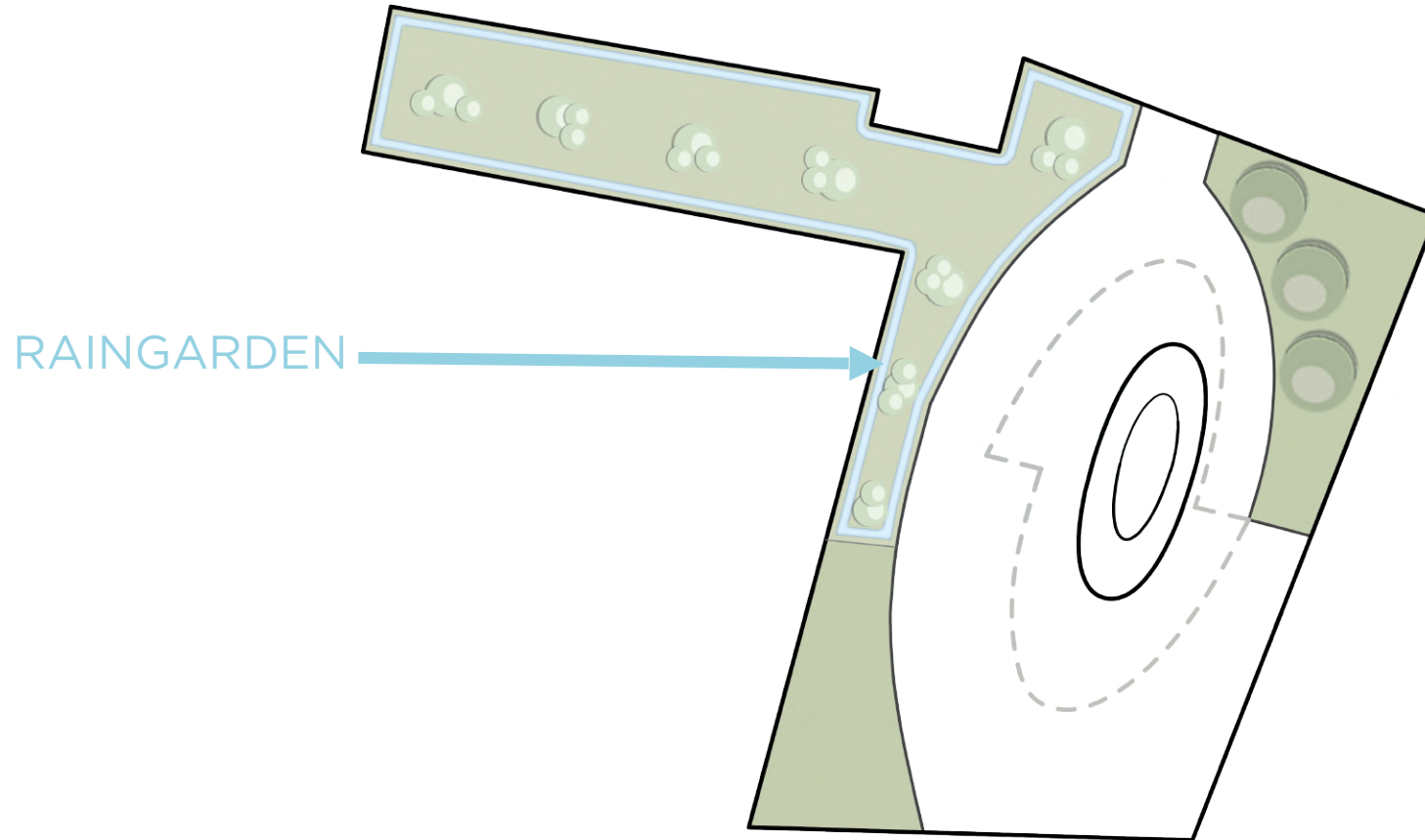
ELECTRICAL POWER
FEED-IN DISPLACEMENT: -84 tCO₂e/a

SUM -39 tCO₂e/a

1) https://www.berlin.de/ba-charlottenburg-wilmersdorf/_assets/umweltamt/klimaschutz/klimaschutzpotenzialanalyse_von_dach-_fassaden-_und_strassenbaumbegruenung.pdf
2) <https://www.oekobaudat.de/>

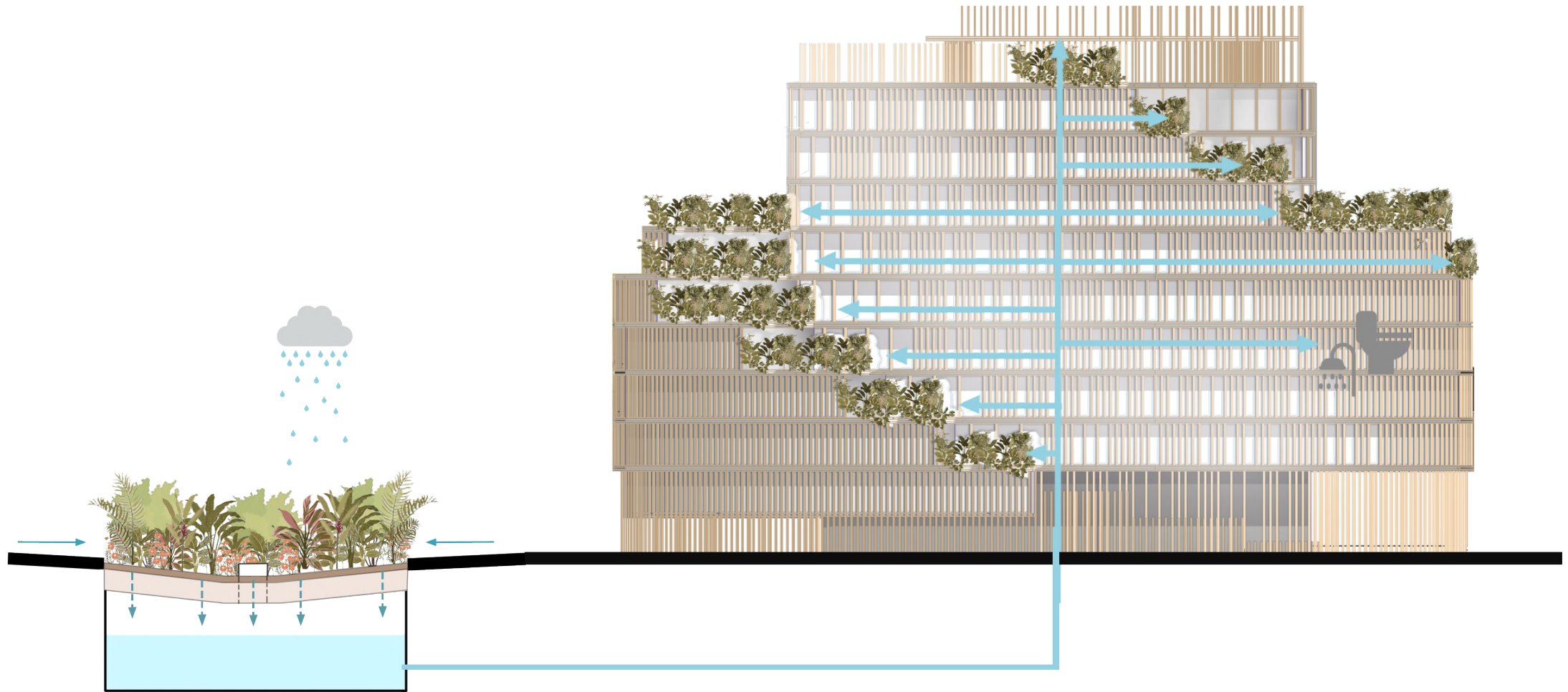


RAINWATER



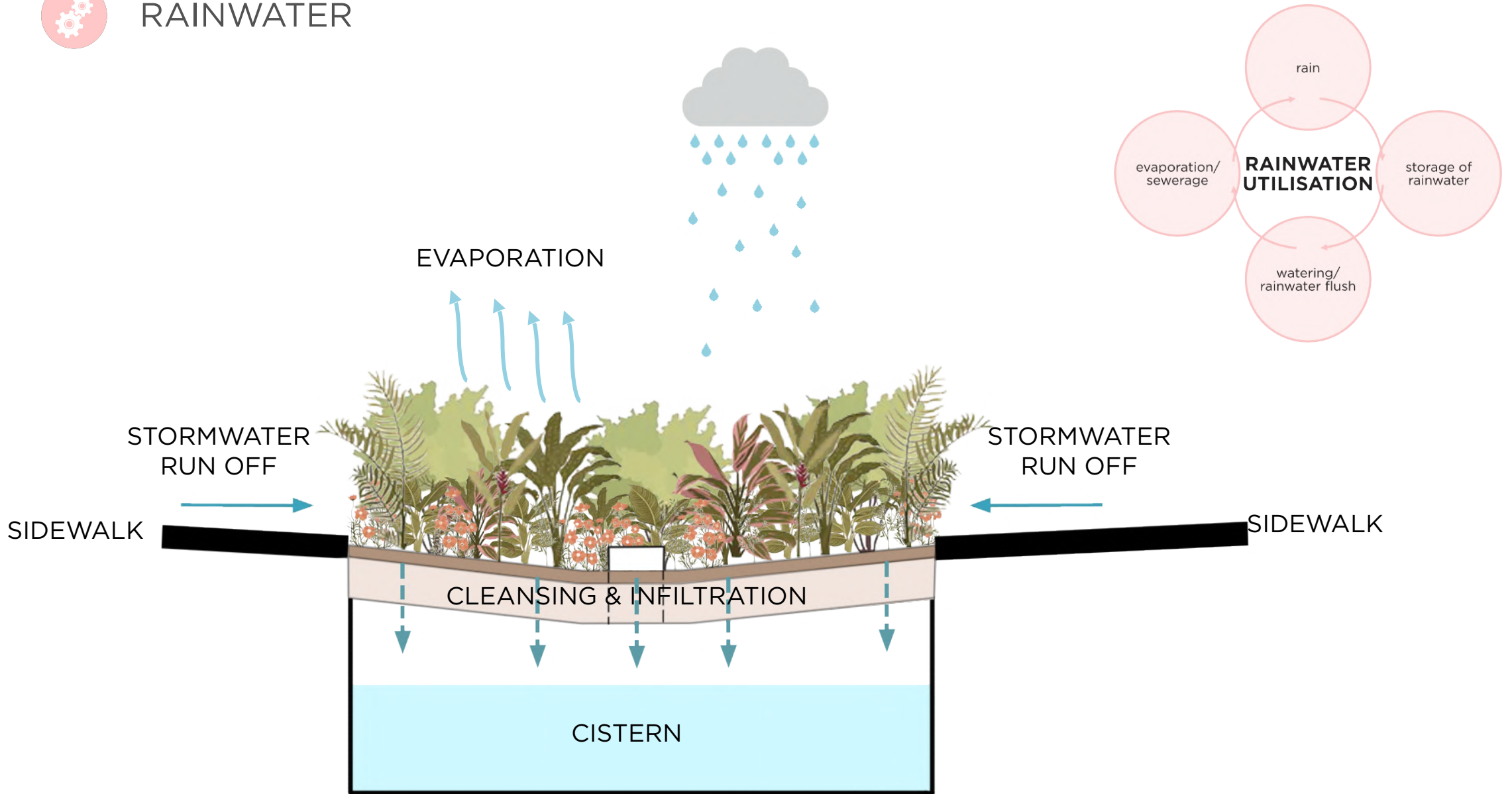


RAINWATER





RAINWATER



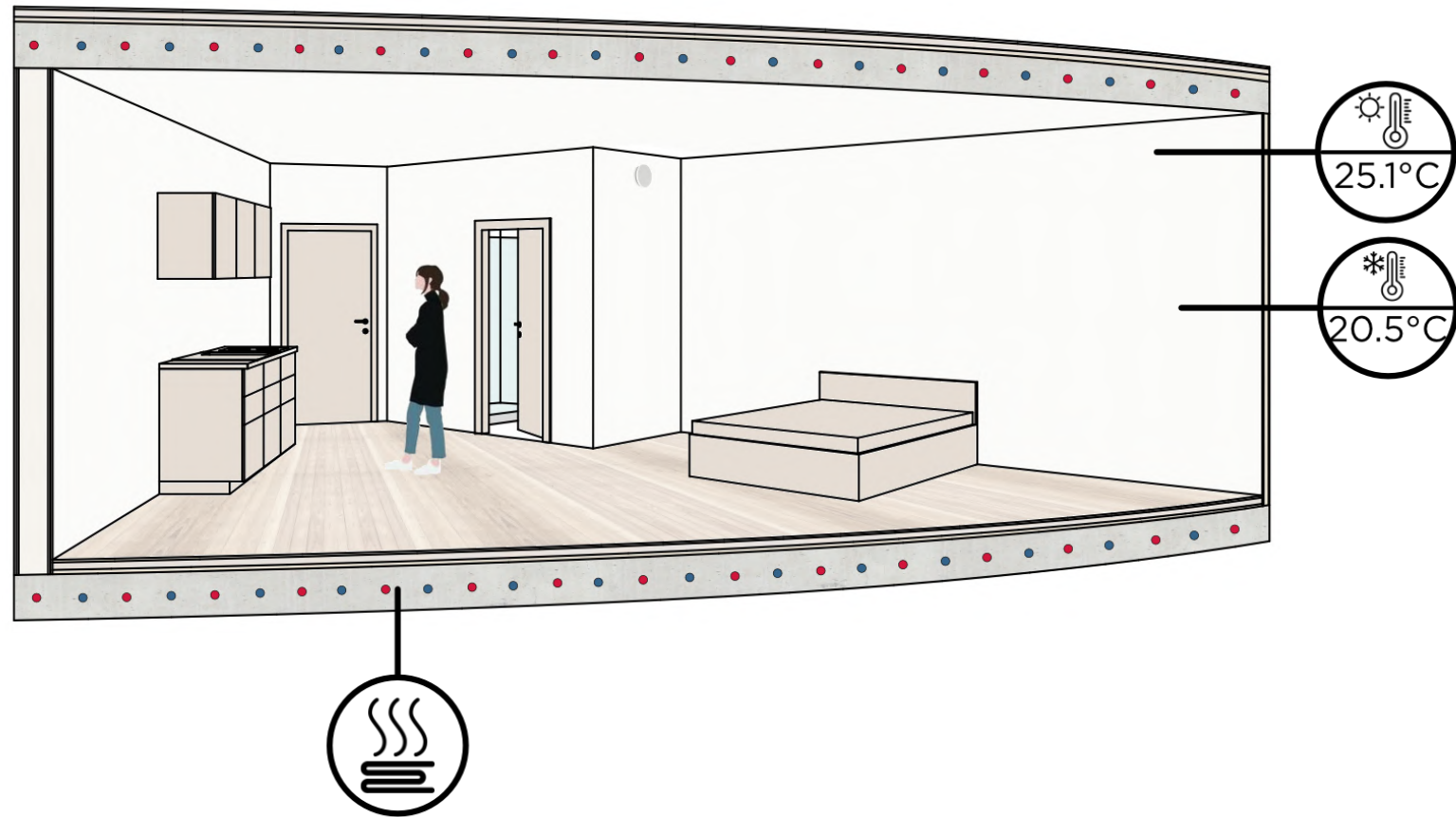


SIMULATION





SIMULATION - THERMAL COMFORT



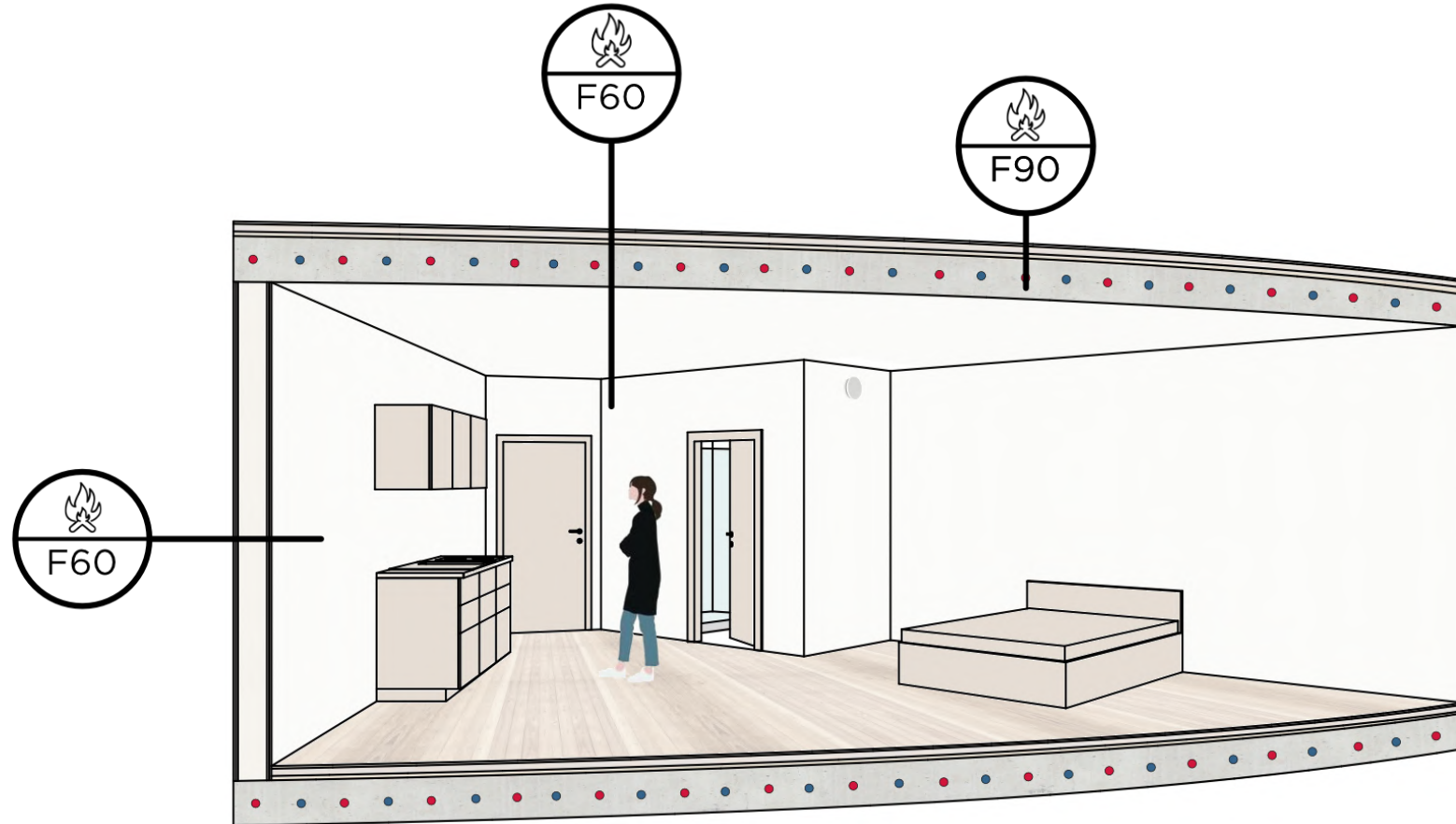


SIMULATION - ACOUSTIC COMFORT



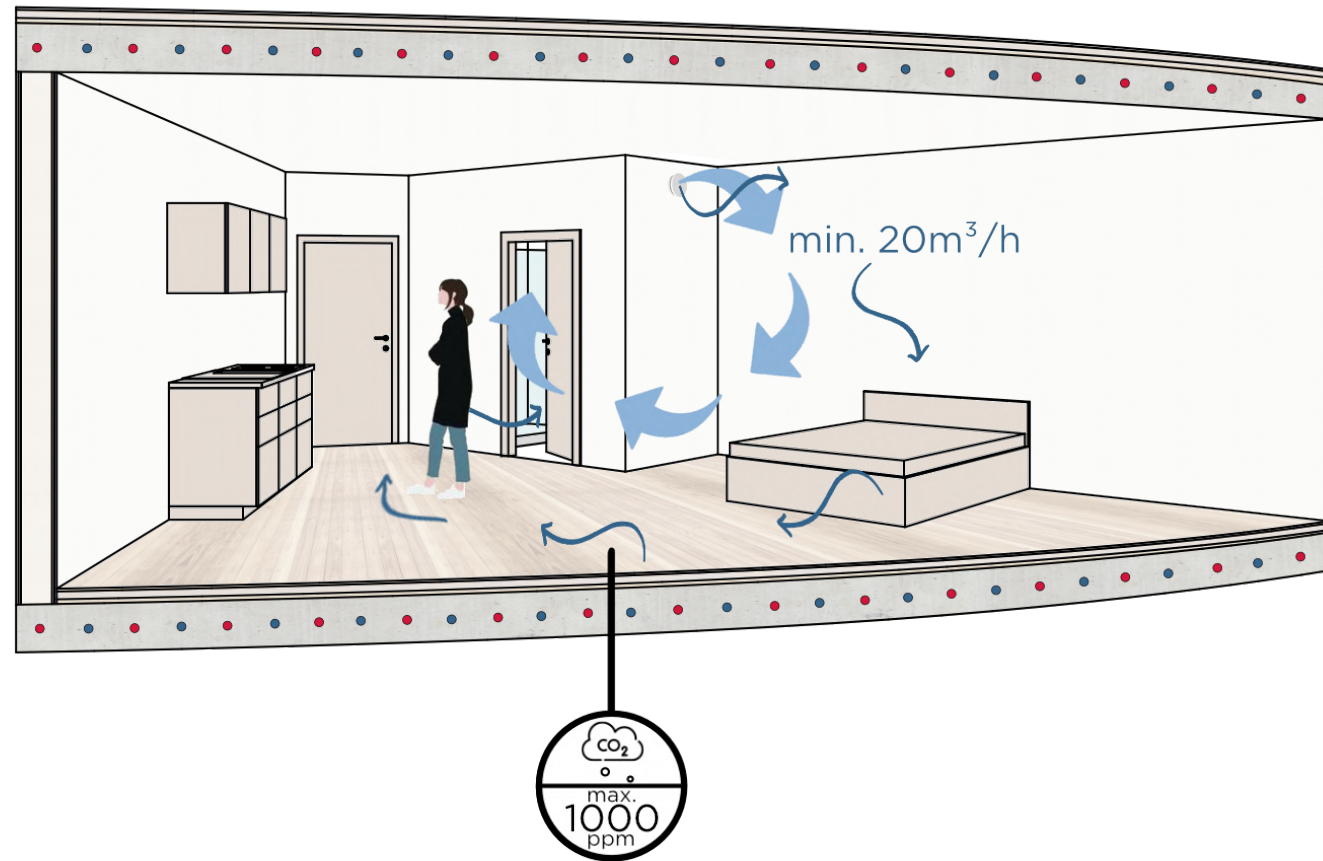


SIMULATION - FIRE SAFETY





SIMULATION - INDOOR AIR QUALITY

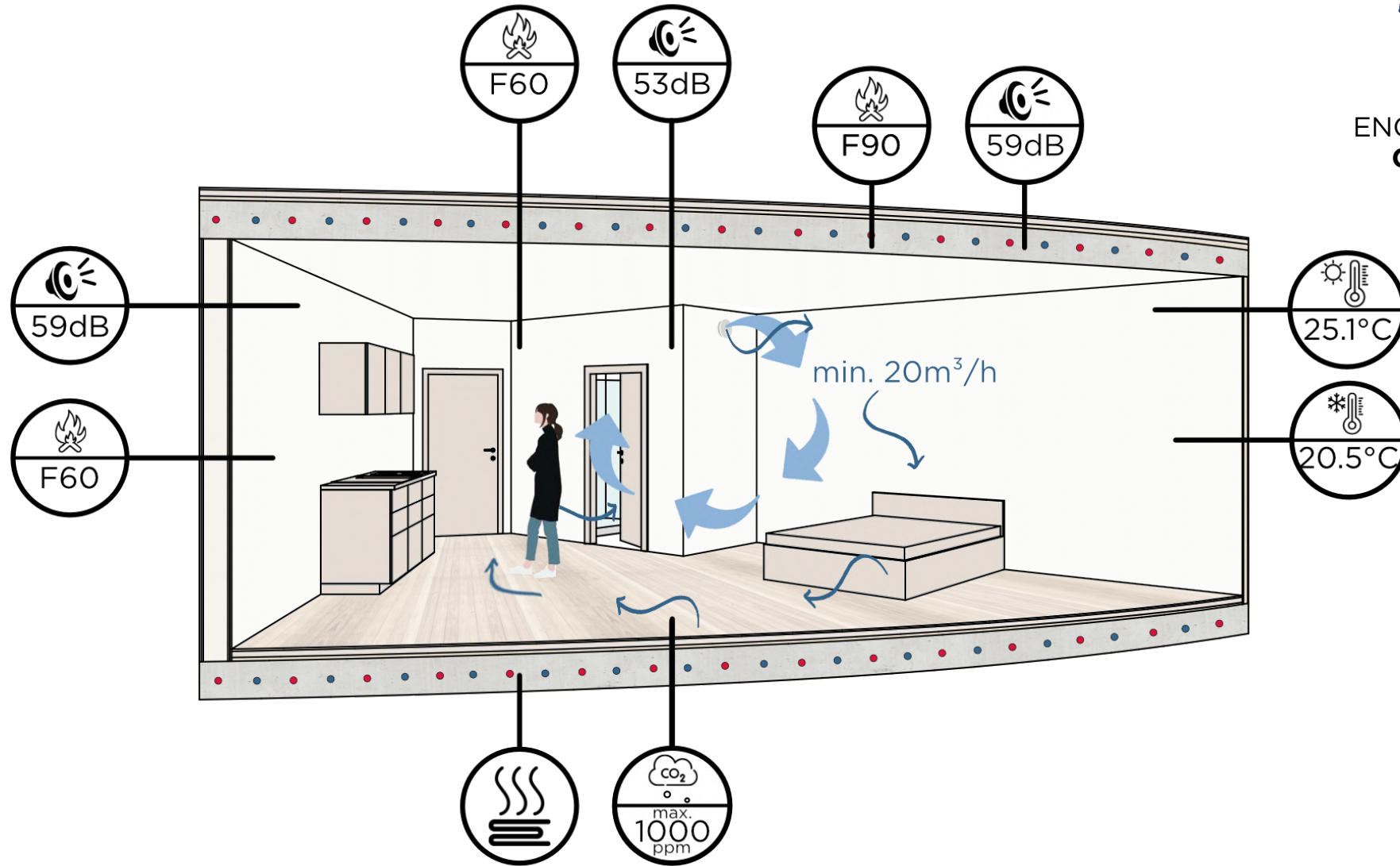




SIMULATION



ENGINEERED BY THE
GREEN CROWN





ENGINEERED BY THE
GREEN CROWN

