

MULTI COMFORT

Student Contest, Paris 2020/2021



Saint
Denis

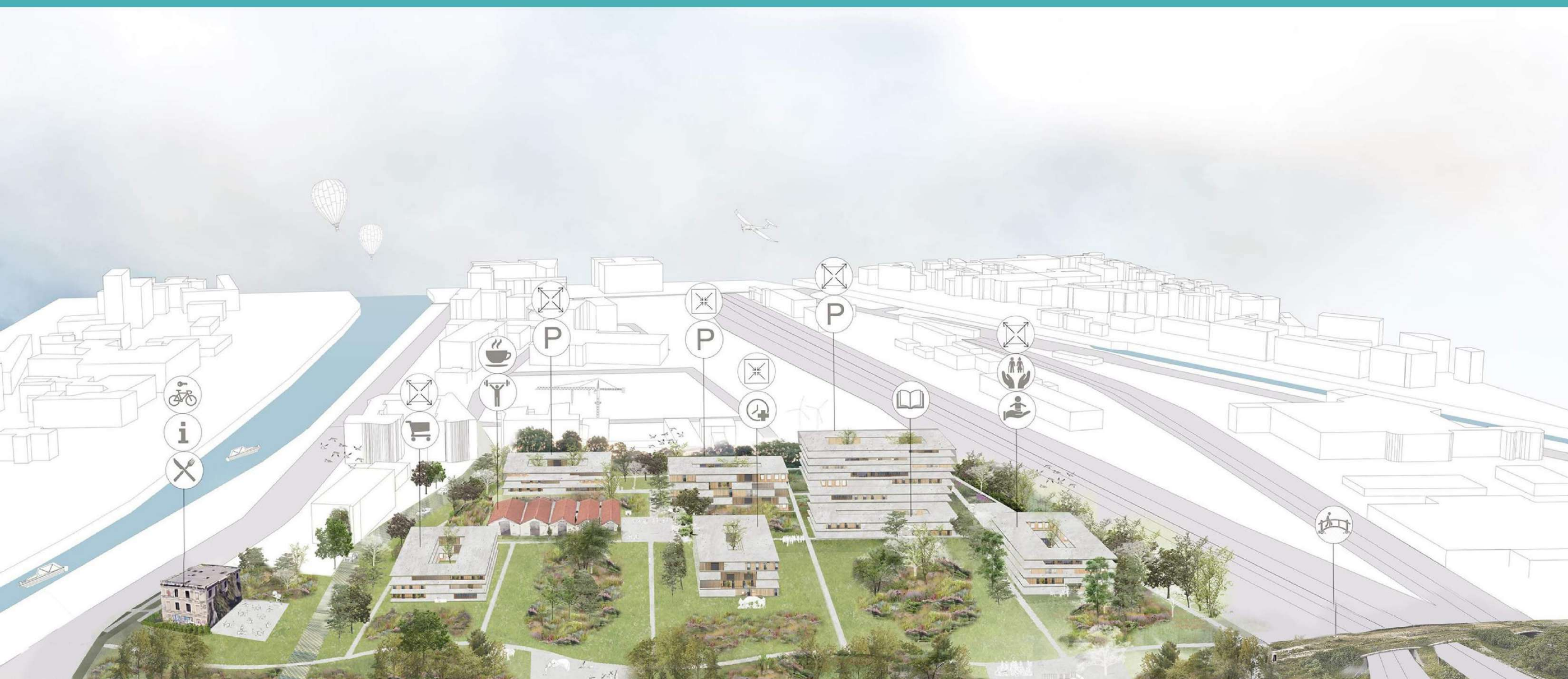


Country: Belgium

University: University of Hasselt

Names of students: Jord Lindelauf, Brigit van den Broek, Bo Westerlinck

Presentation number: 50



Participants - Group 50

Jord Lindelauf



Birgit Van Den Broek



Bo Westerlinck



Students Second Master of Architecture - University of Hasselt, Belgium

Mentor during design process

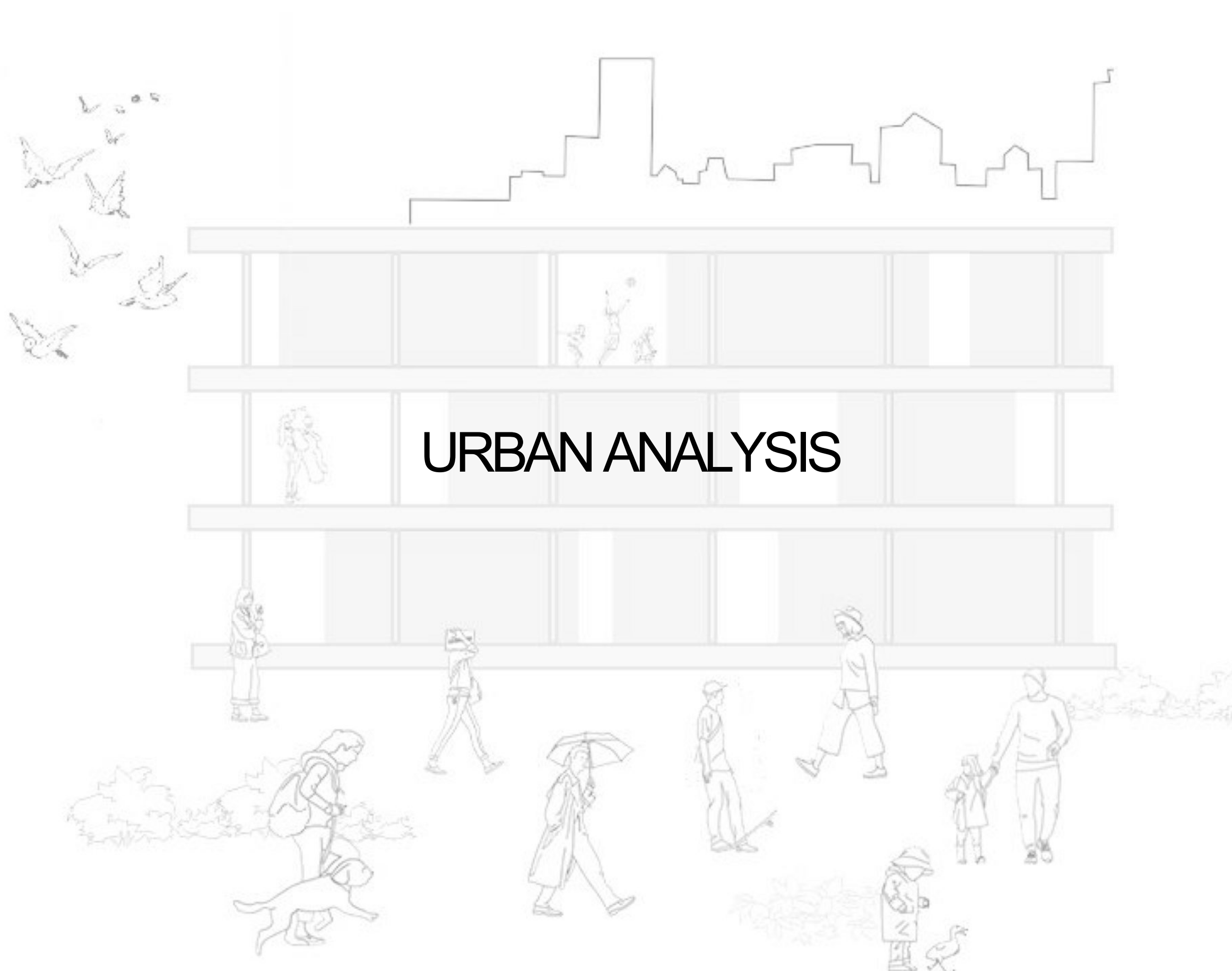


DANNY WINDMOLDERS

BELGIUM

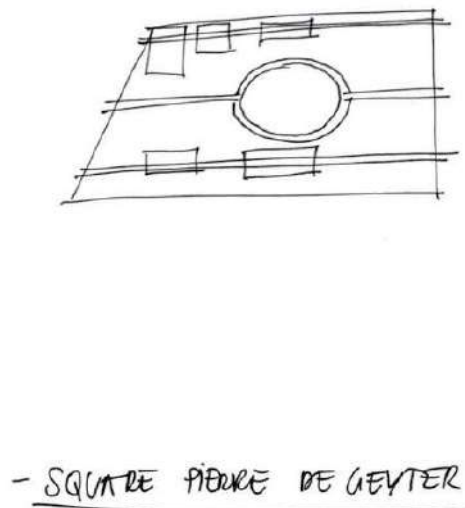
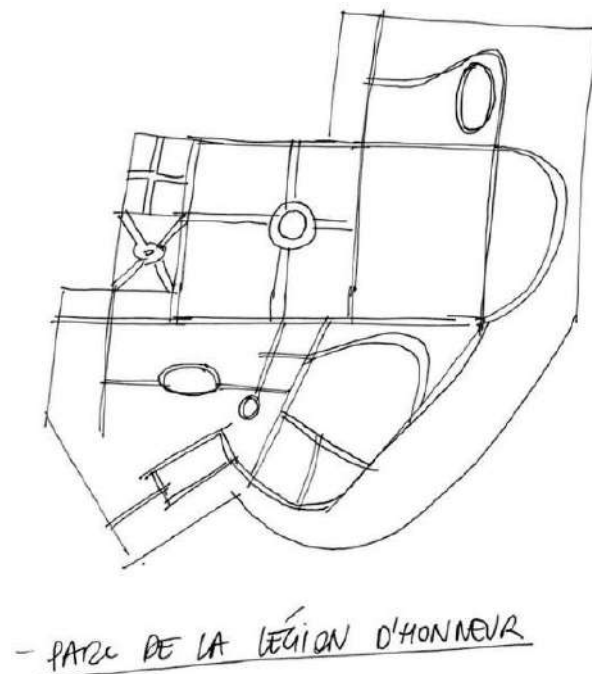
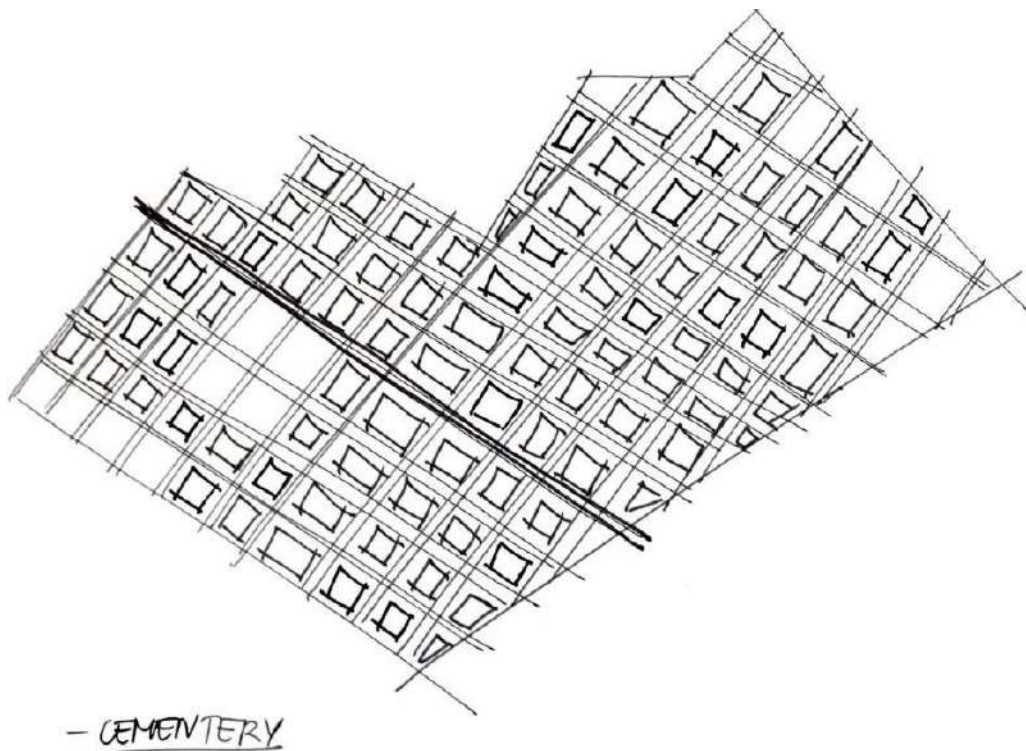
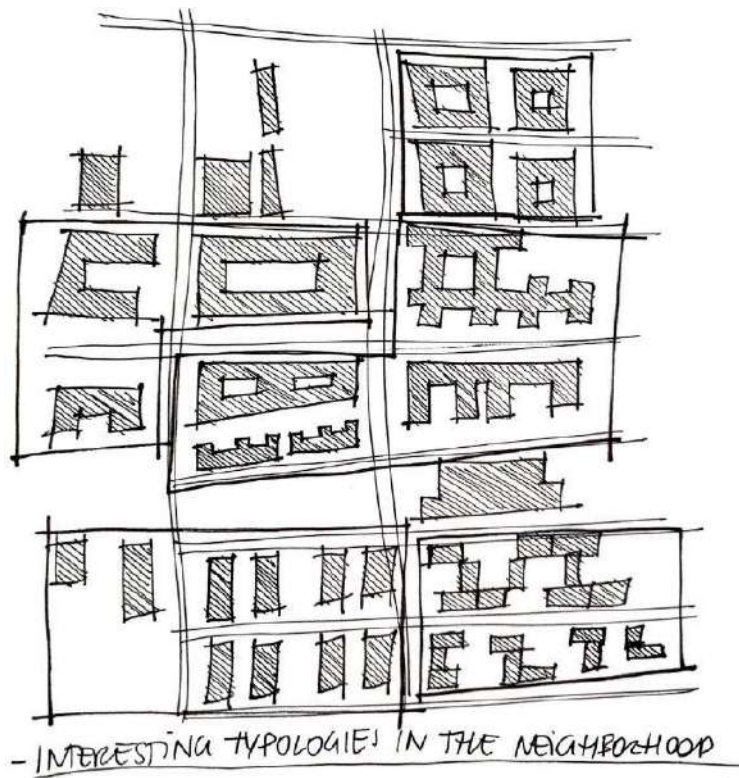
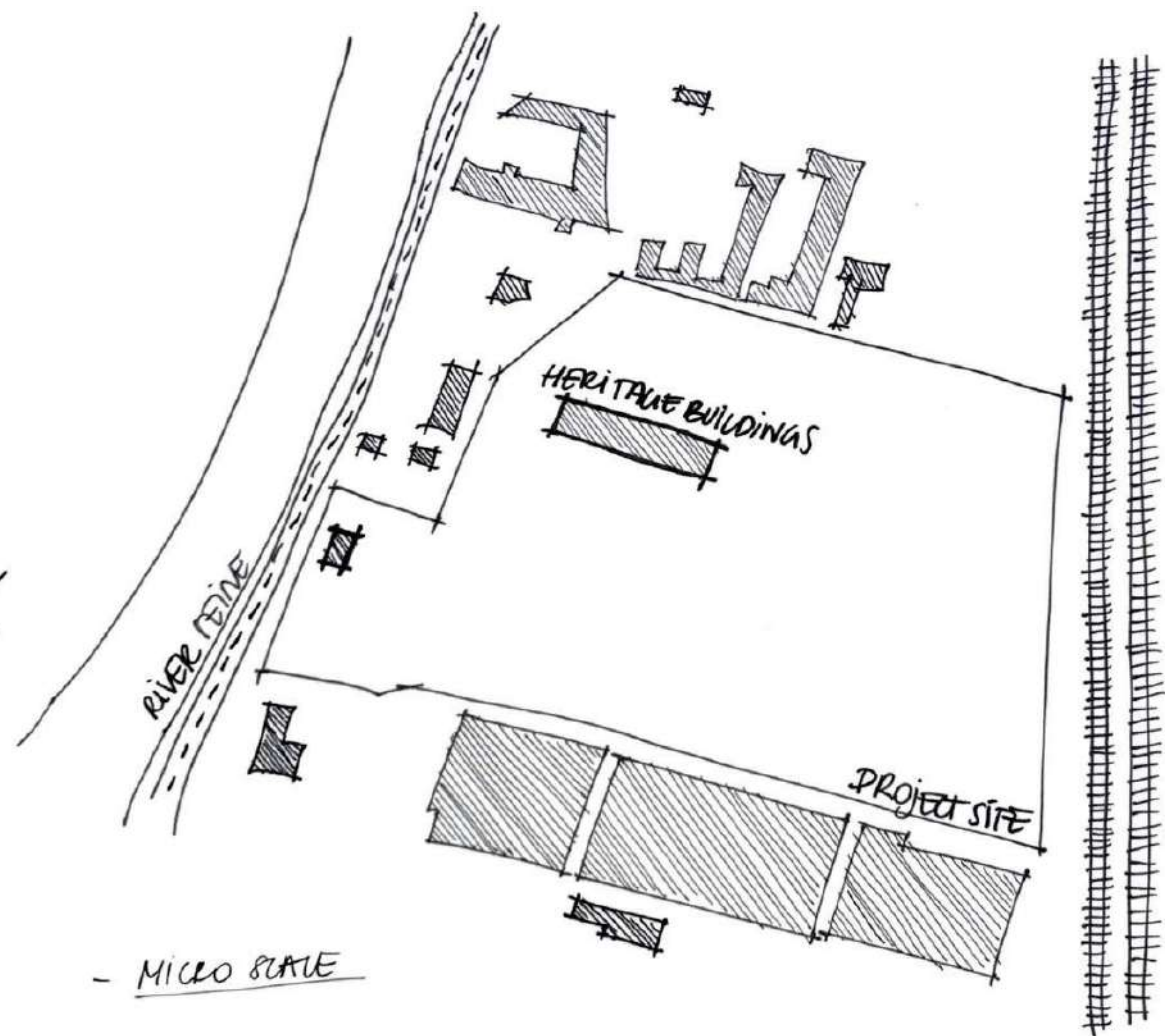
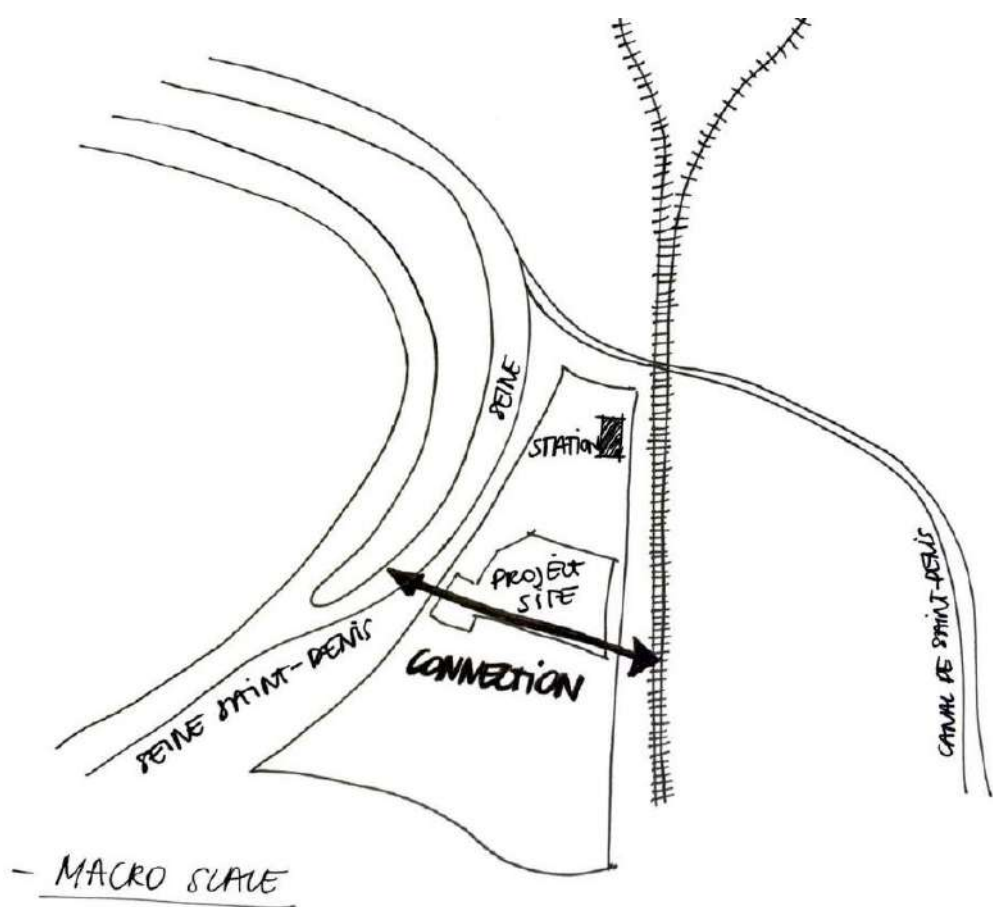
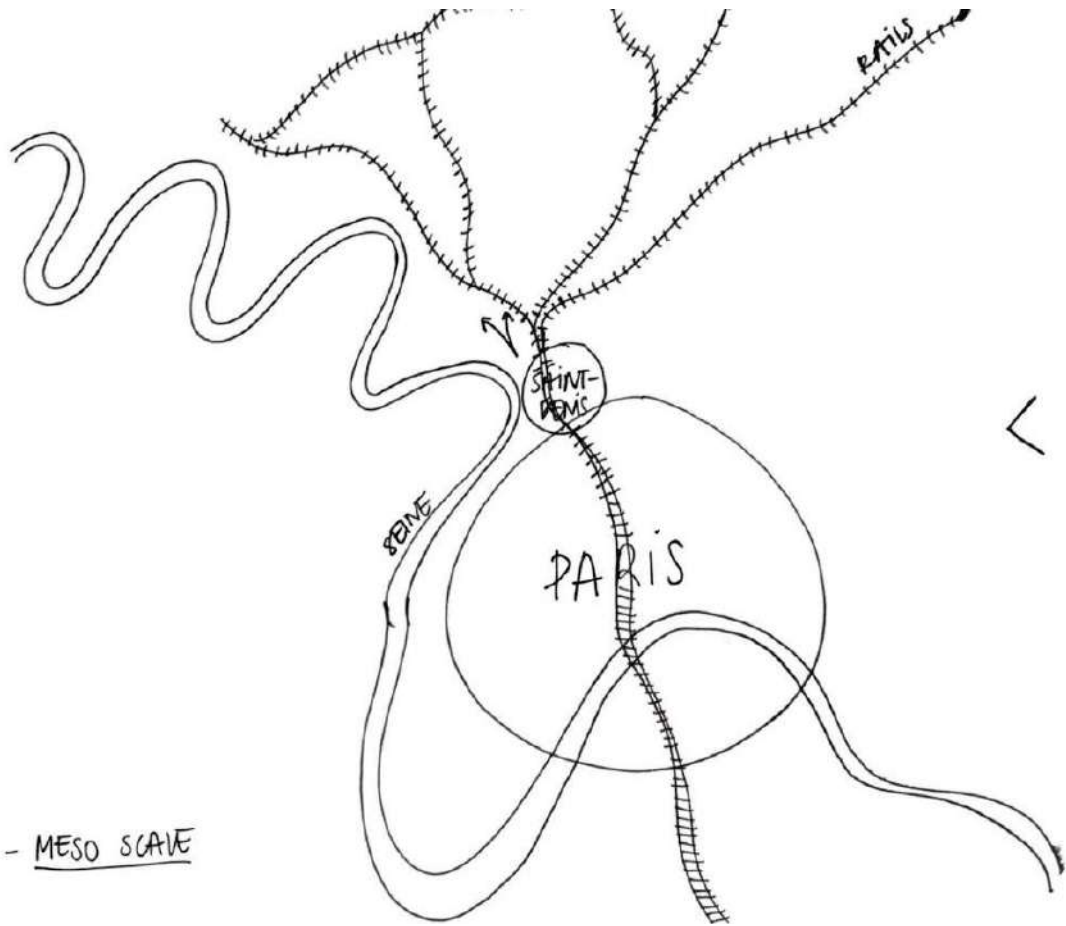
Danny Windmolders is docent at the UHasselt (B), Department of Architecture and Art, where he graduated with Master Degree from Architecture in 1982. In 1999 he graduated with Master Degree from Urbanism at the Luca School of Arts Brussels (B). He is manager of Architectenbureau FCS (www.FCS.be), an architecture office where he started working in 1982. Since 1989 he has been an Academic teacher at the UHasselt. He has also always been engaged in organizations that promote the improvement in the profession of architecture and that want to increase public awareness of the nature of architecture and its essential contribution to life and society. So he has been chairman of the 'Orde van Architecten Limburg' and chairman of the 'Nationaal Architecten Verbond'. He is currently chairman of the Procoro; provincial spatial planning commission.





URBAN ANALYSIS

Urban analysis Saint-Denis



Historical analysis site



1950-1965



Present

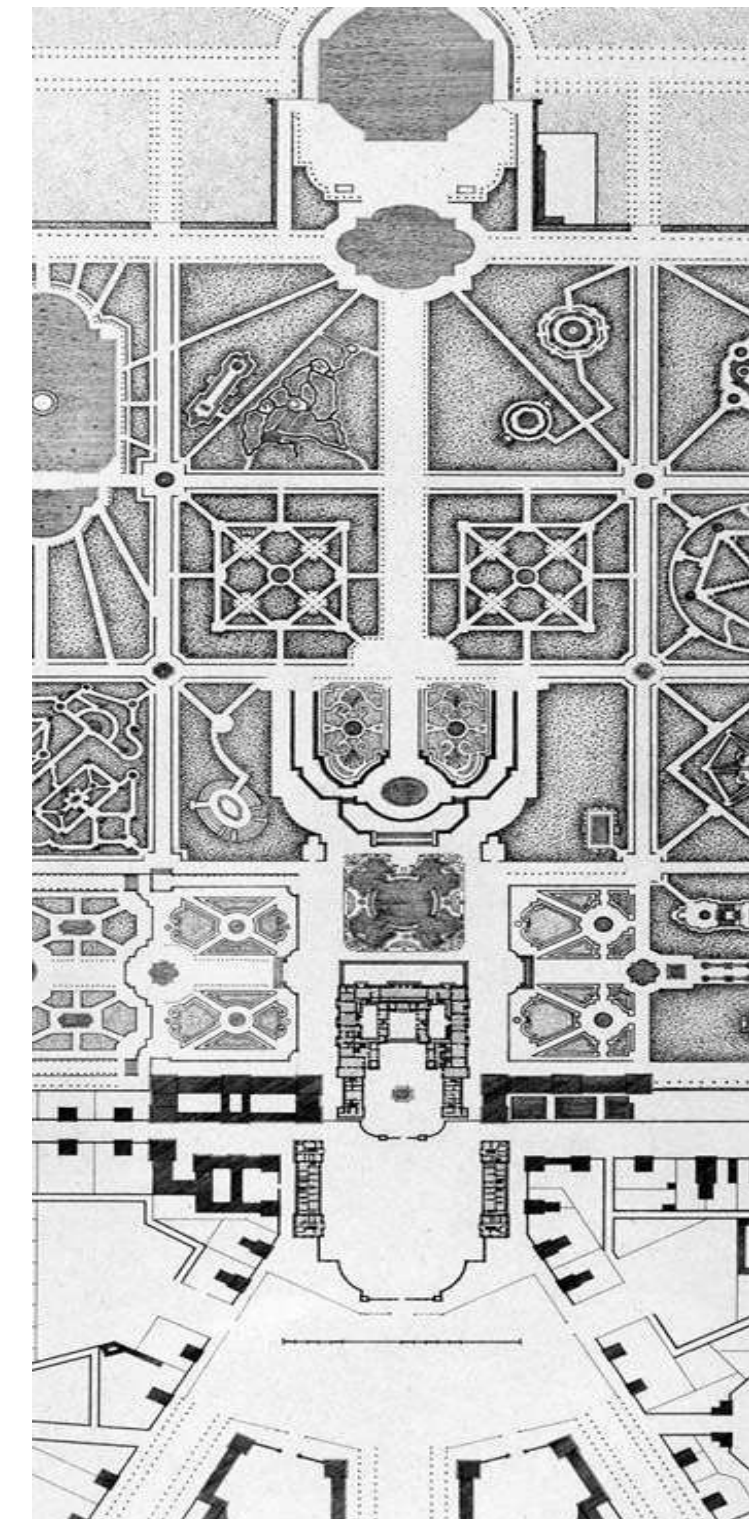
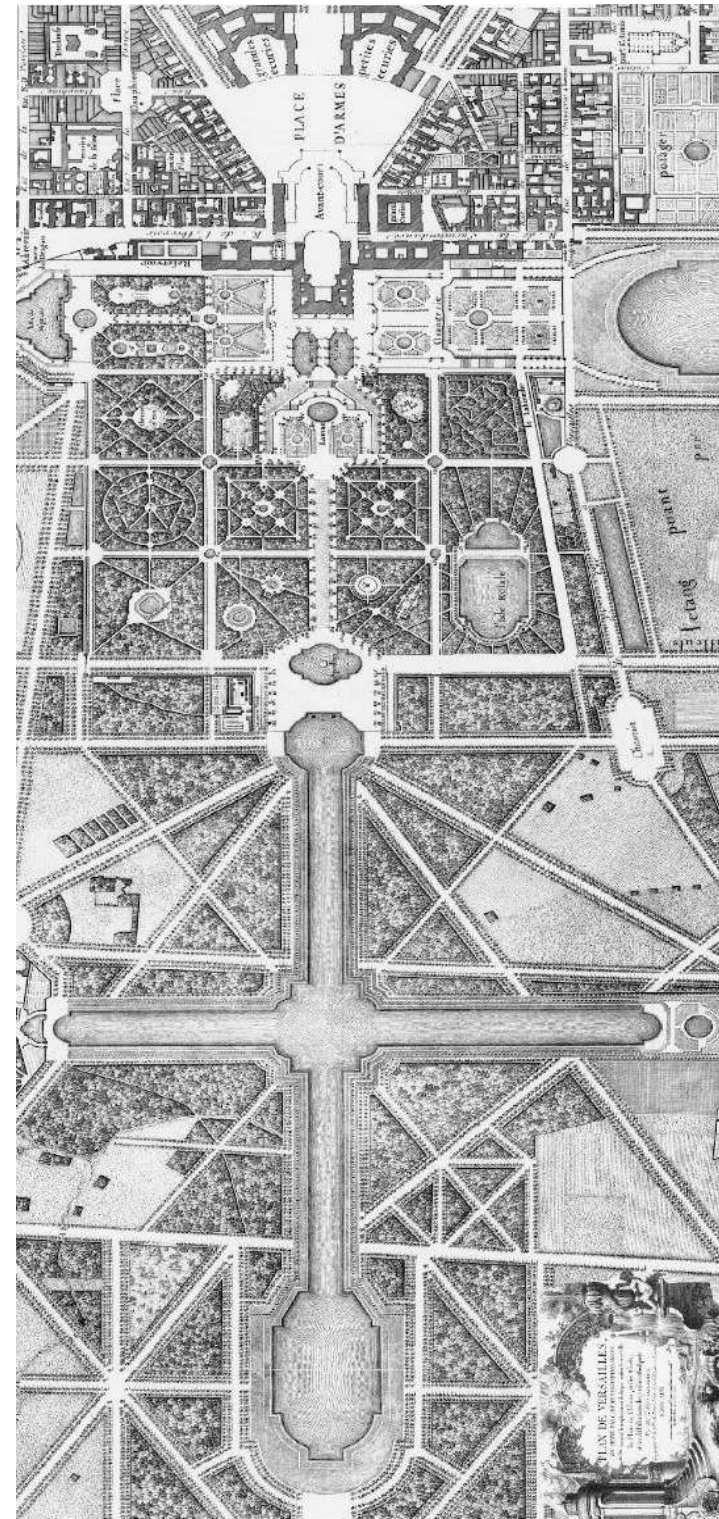
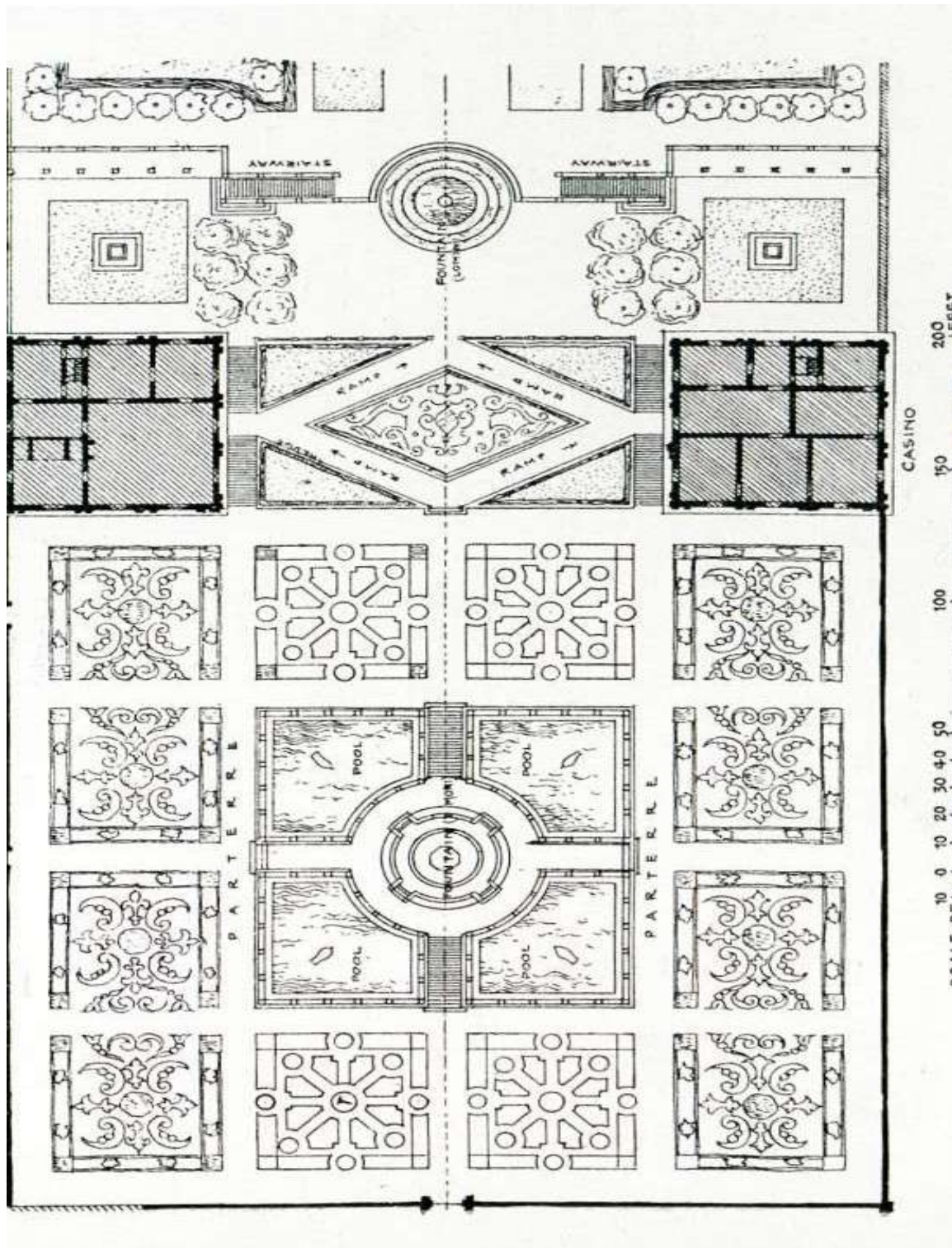
Historical analysis site



1950-1965

Present

Inspiration French Garden



Orthogonal structure -> creating rooms of vegetation

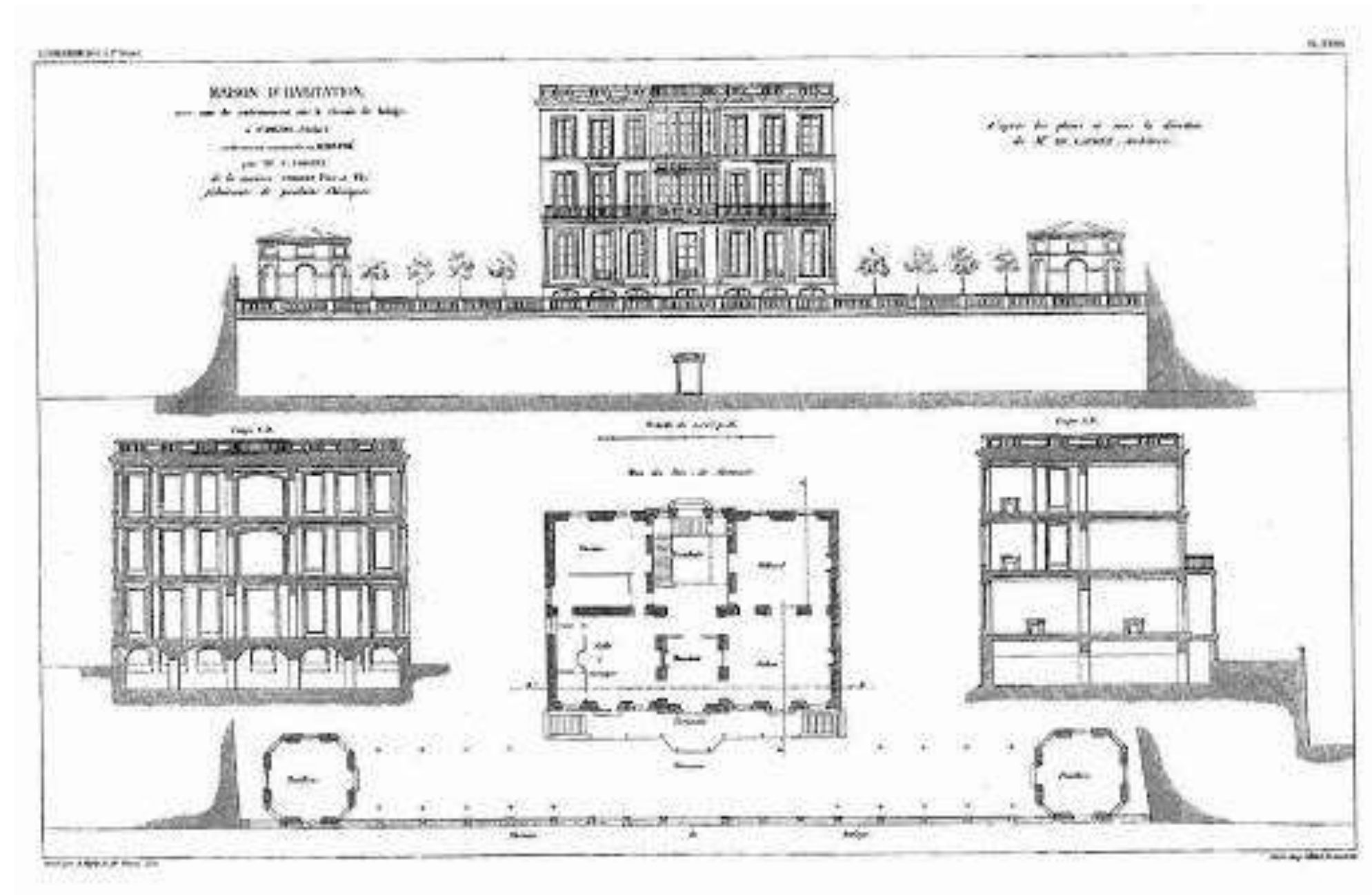
Clear axis (East-West), perpendicular to the facade of the house -> Maison Coignet

Rows of trees and ornamental flowers in bright colors

Terrace overlooking the garden, gardens should be seen from above

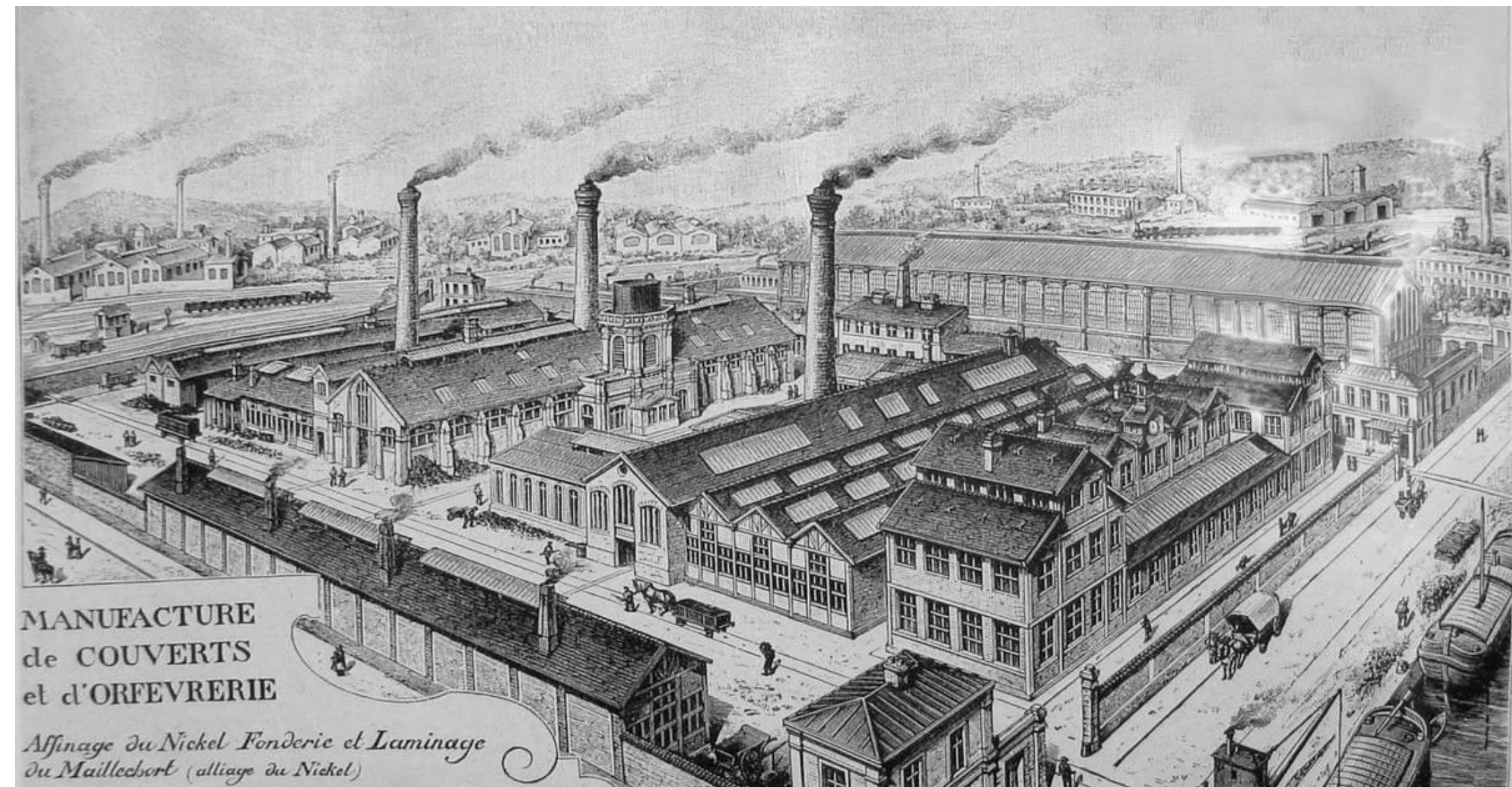
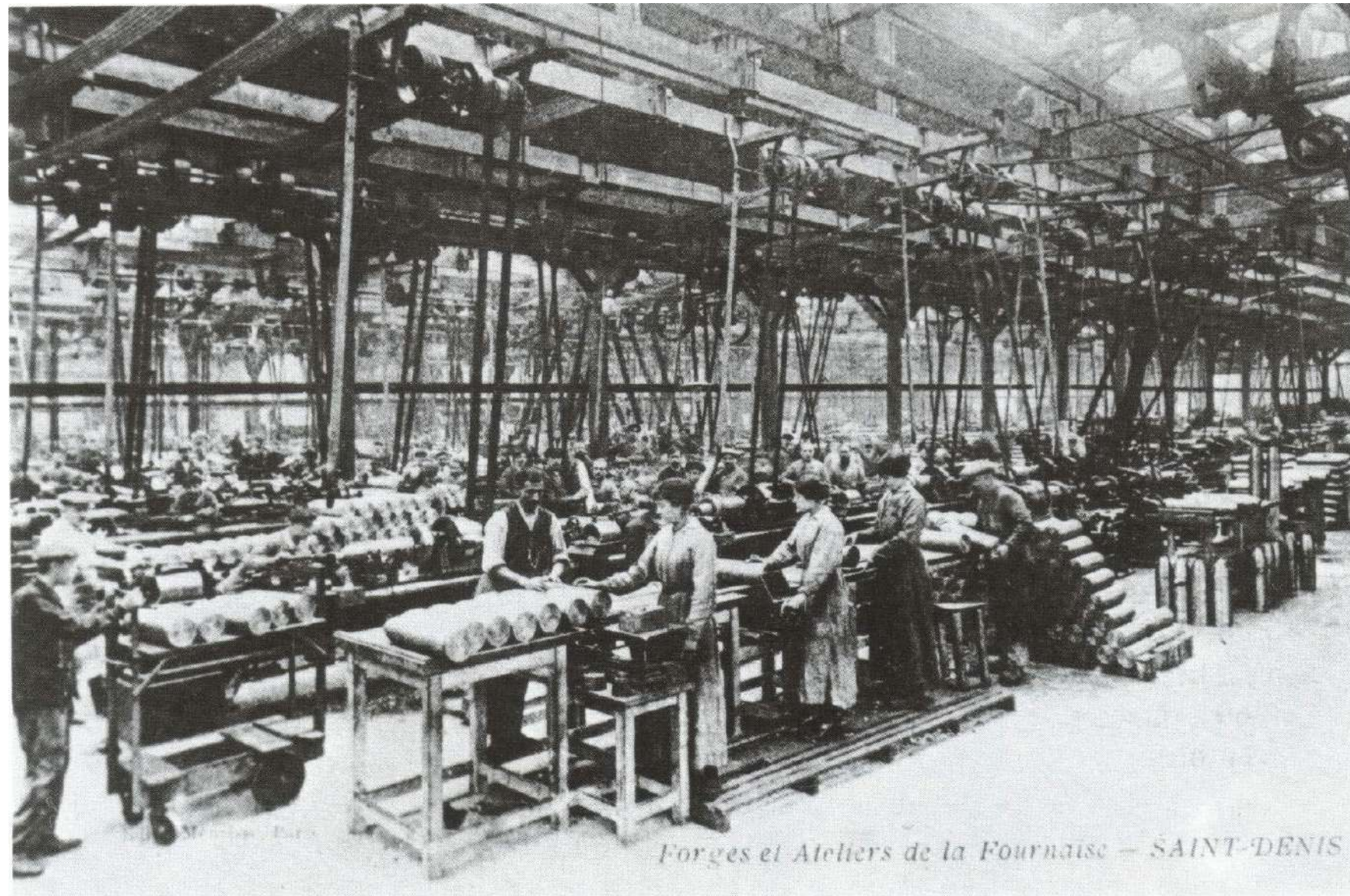
Inspiration Maison Coignet

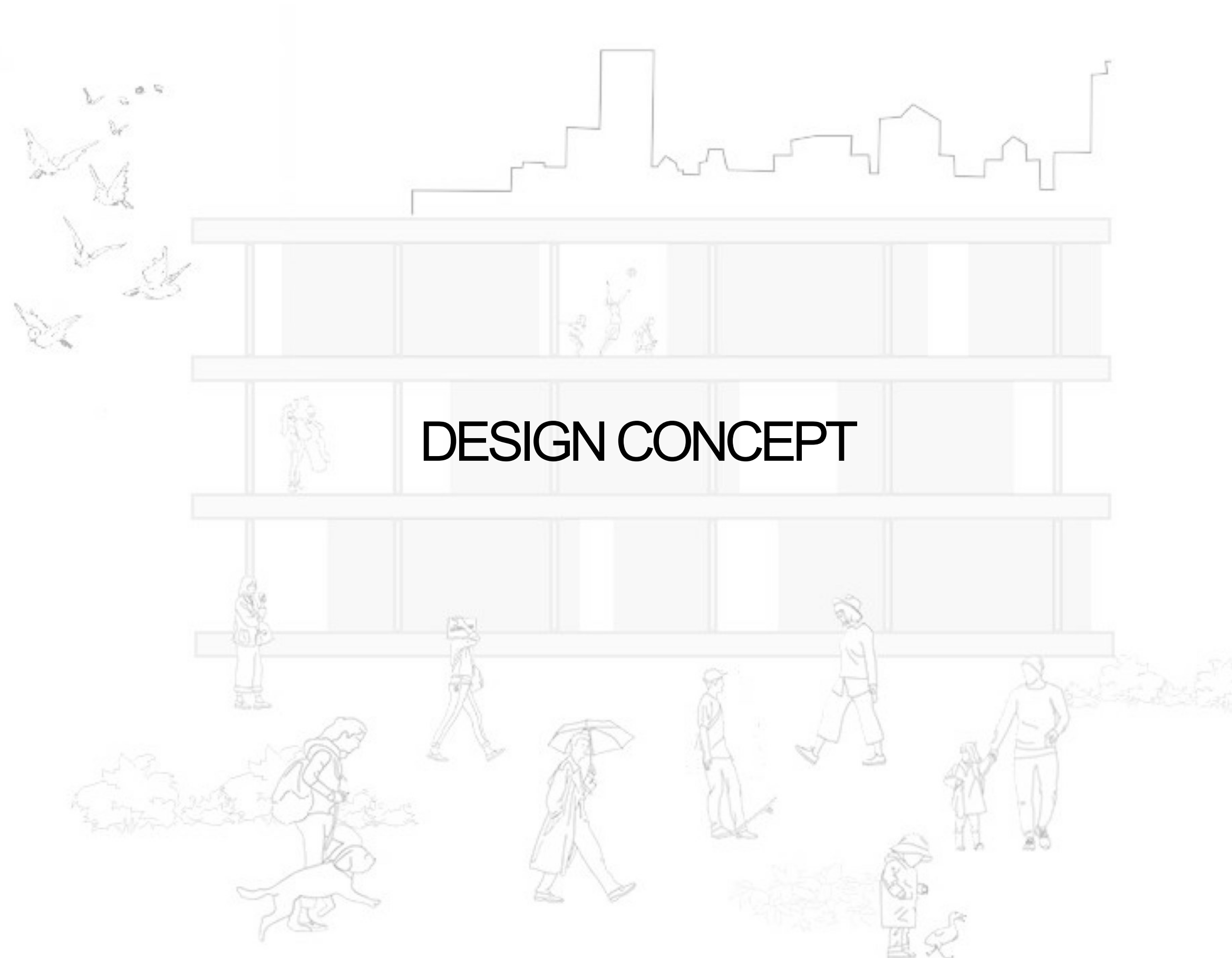
- Designed by local architect Theodore Lachez Built 1853, very first iron reinforced concrete structure where -> use a structural framework made out of concrete slabs and steel columns
- Classified as a historical monument since 1998, however for many years remains abandoned -> create an important community point to restore the importance of this heritage building



Inspiration Industrialized area of Saint-Denis

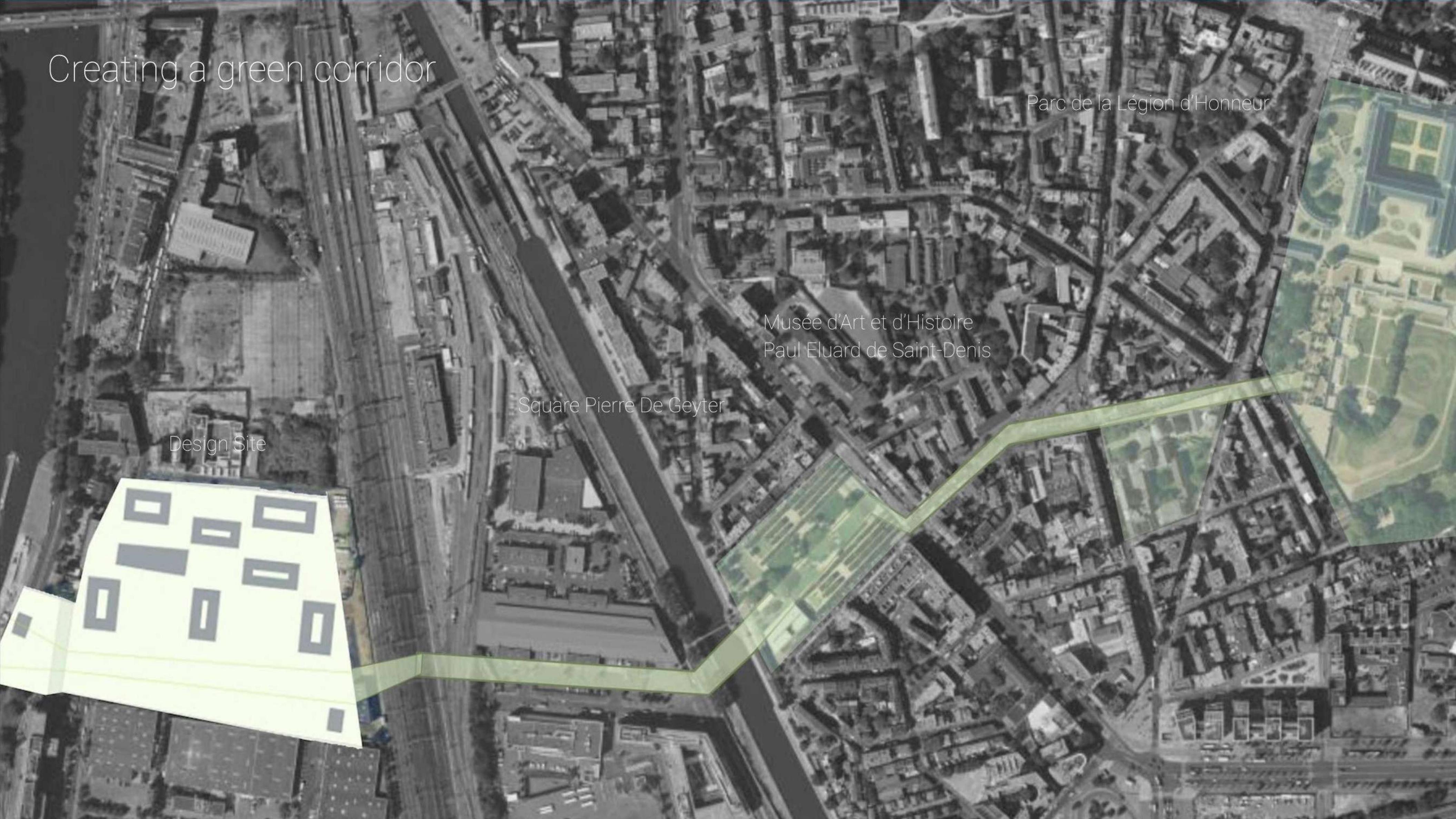
- Building volumes of factories usually very longitudinal and rectangular
 - Placed in parallel or perpendicular to each other
- Use of steel structure, considering that it can be very slim and bear a lot of weight
- Principle of structural load-bearing framework and light-weight built in volumes (for a specific function)
 - Flexibility, adaptability, circularity...





DESIGN CONCEPT

Creating a green corridor

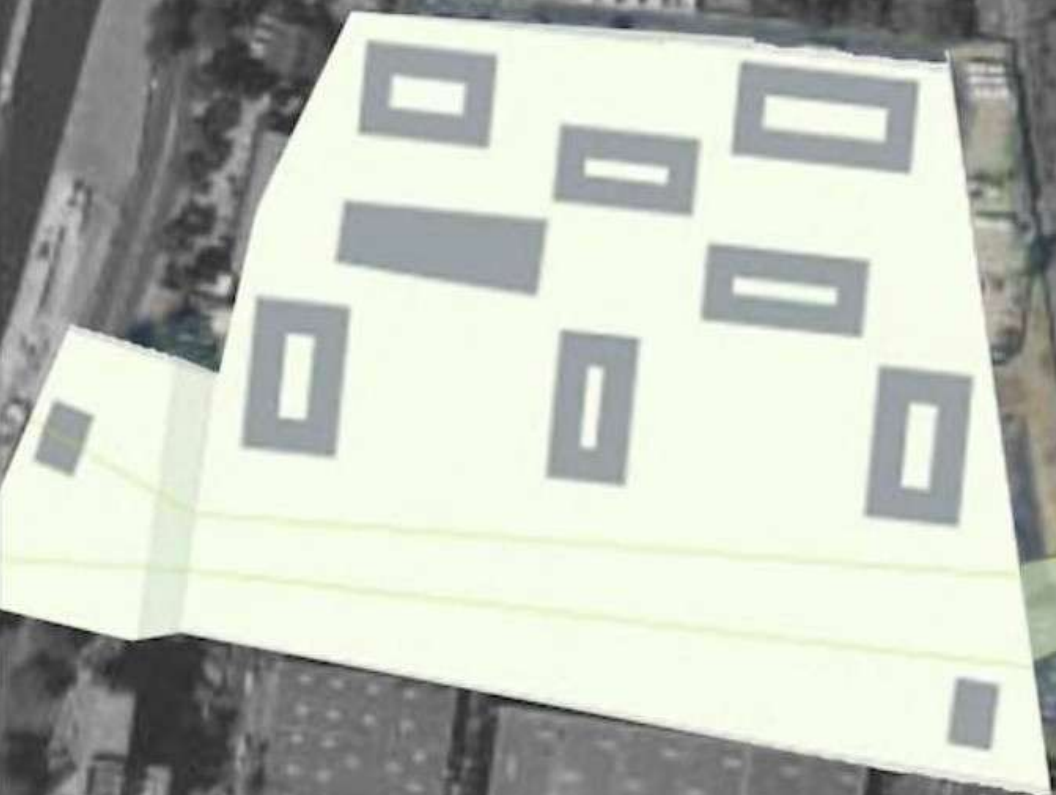


Parc de la Légion d'Honneur

Musée d'Art et d'Histoire
Paul Eluard de Saint-Denis

Square Pierre De Geyter

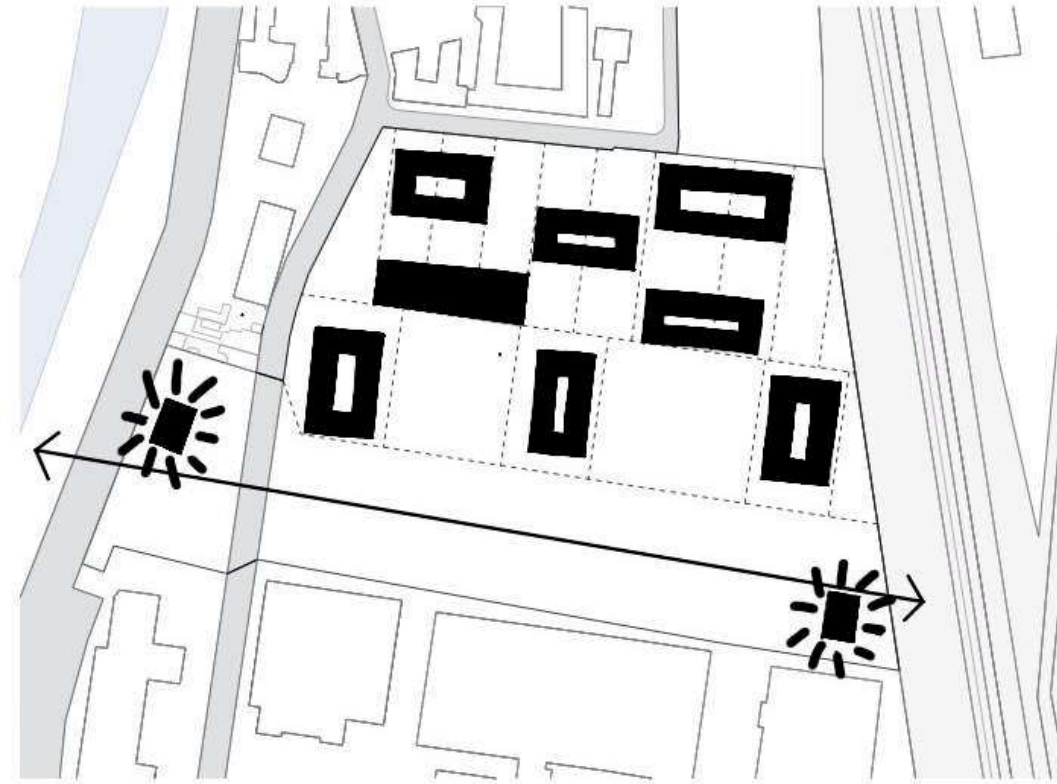
Design Site



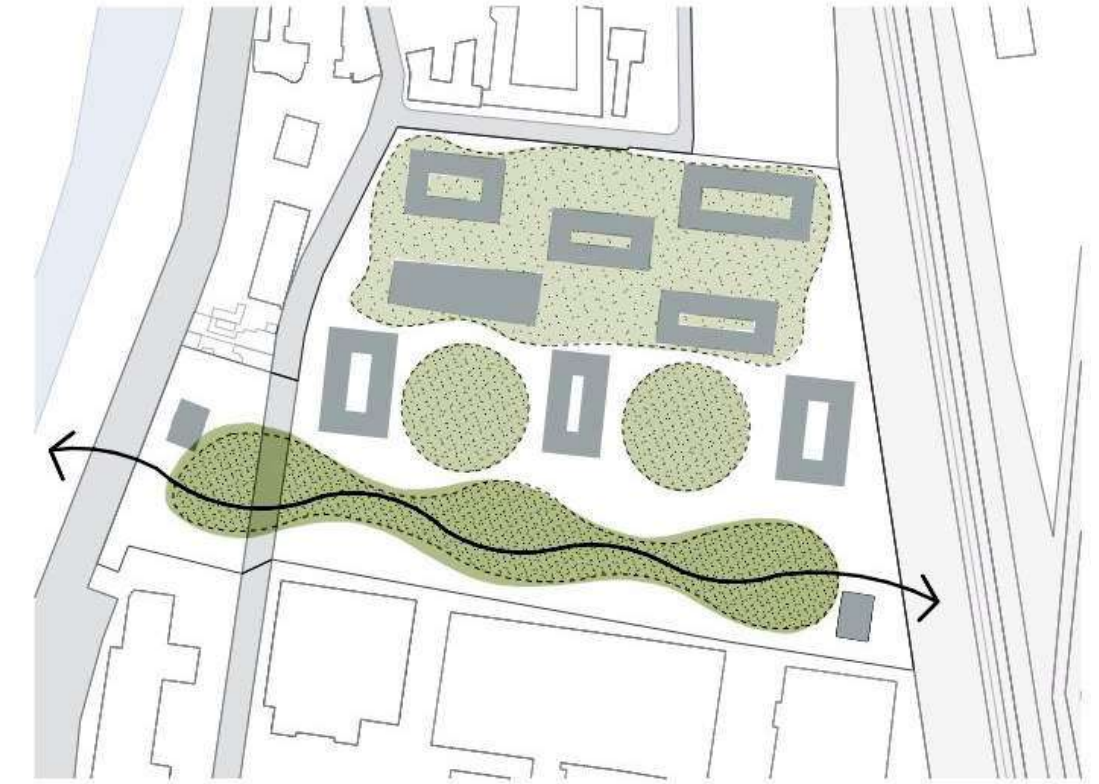
Designing the masterplan



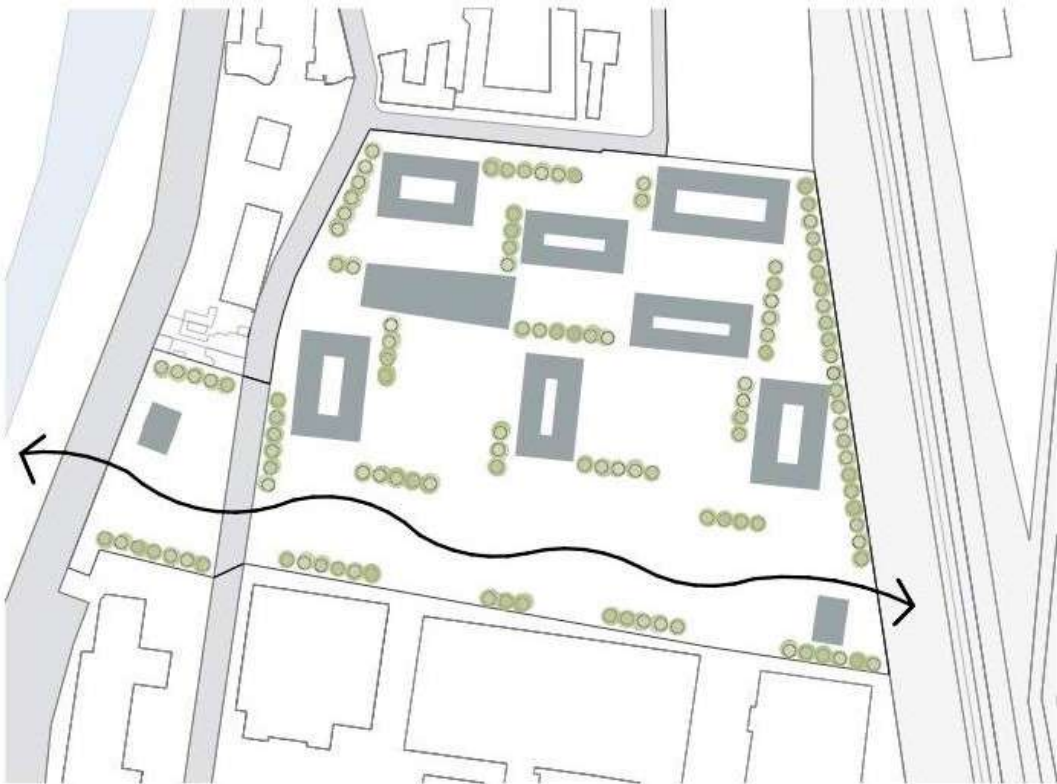
Design grid inspired by French Gardens, with strong East-West axis



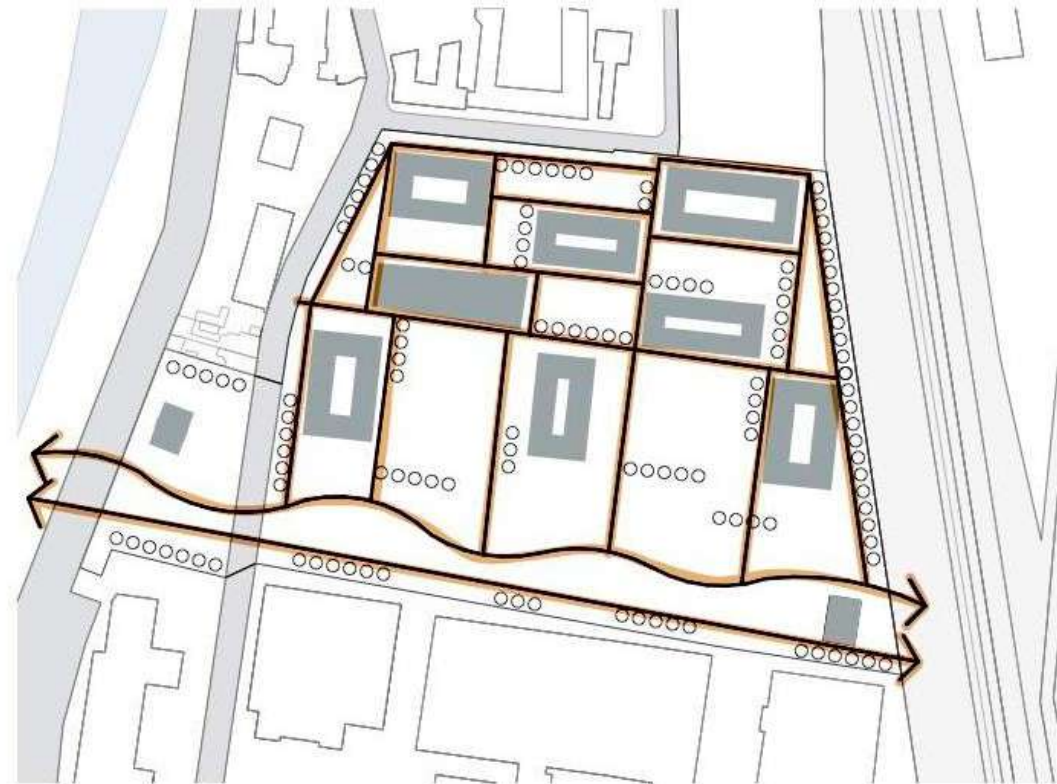
Building volumes integrated in grid, introvert and extrovert building type



Foreground (green park corridor), middle ground (living in the park), background (living in between green)



Rows of trees creating different rooms in the masterplan (French Garden)



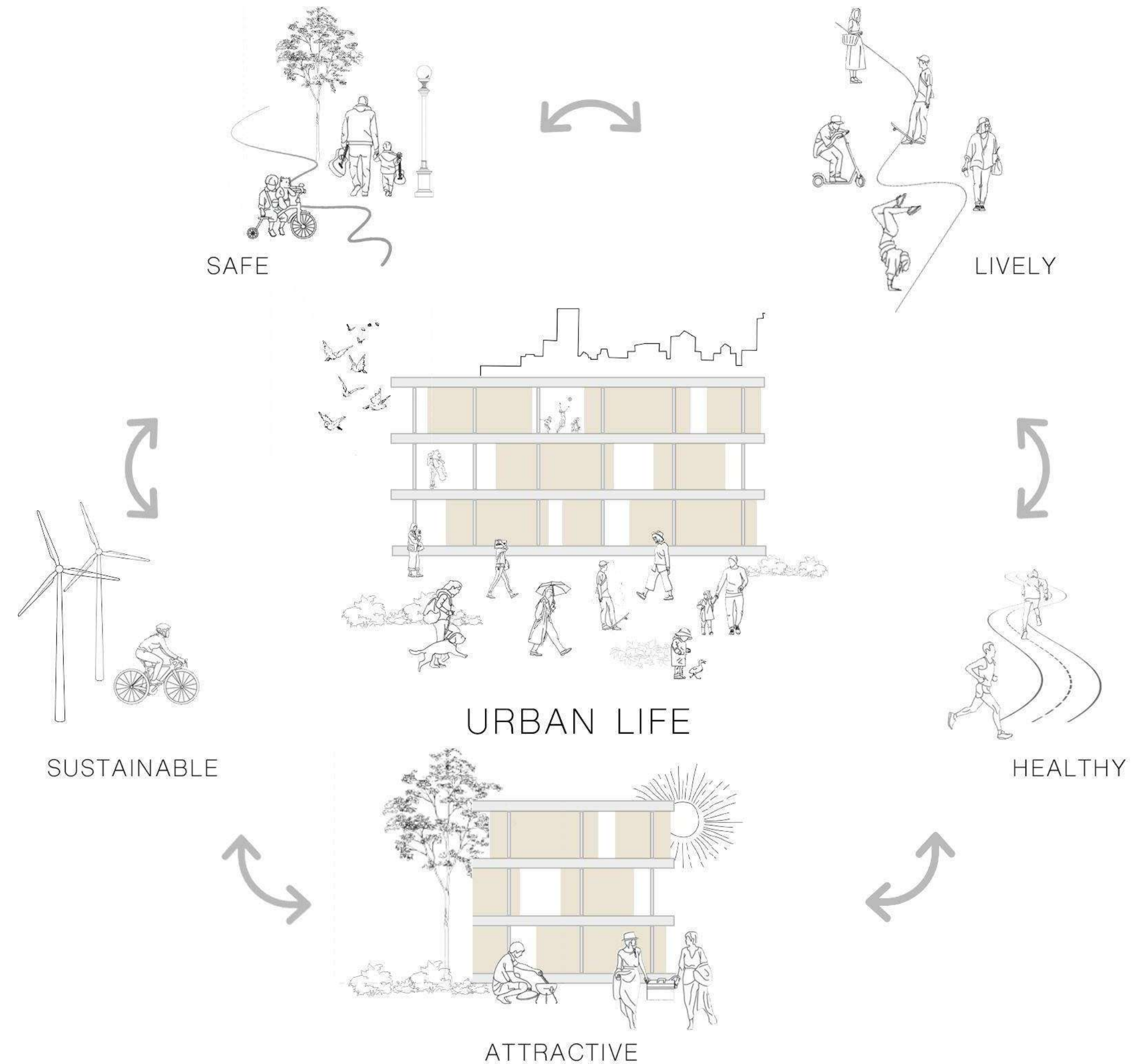
Circulation on site (fast and slow connection in park, orthogonal paths to buildings, middle axis for fire truck)



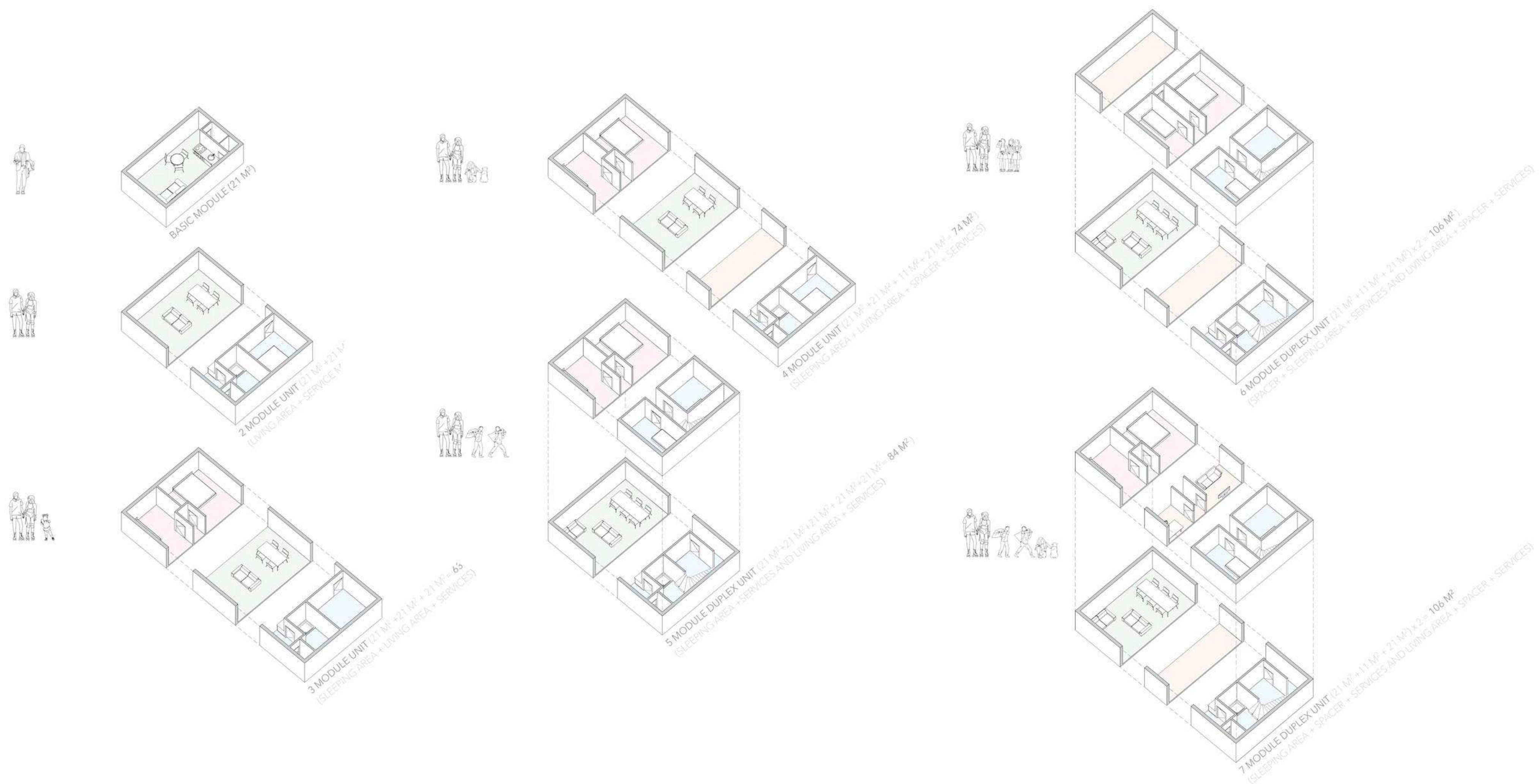
Natural vegetation on site with several squares in between, total masterplan vision

Multicomfort is... having options

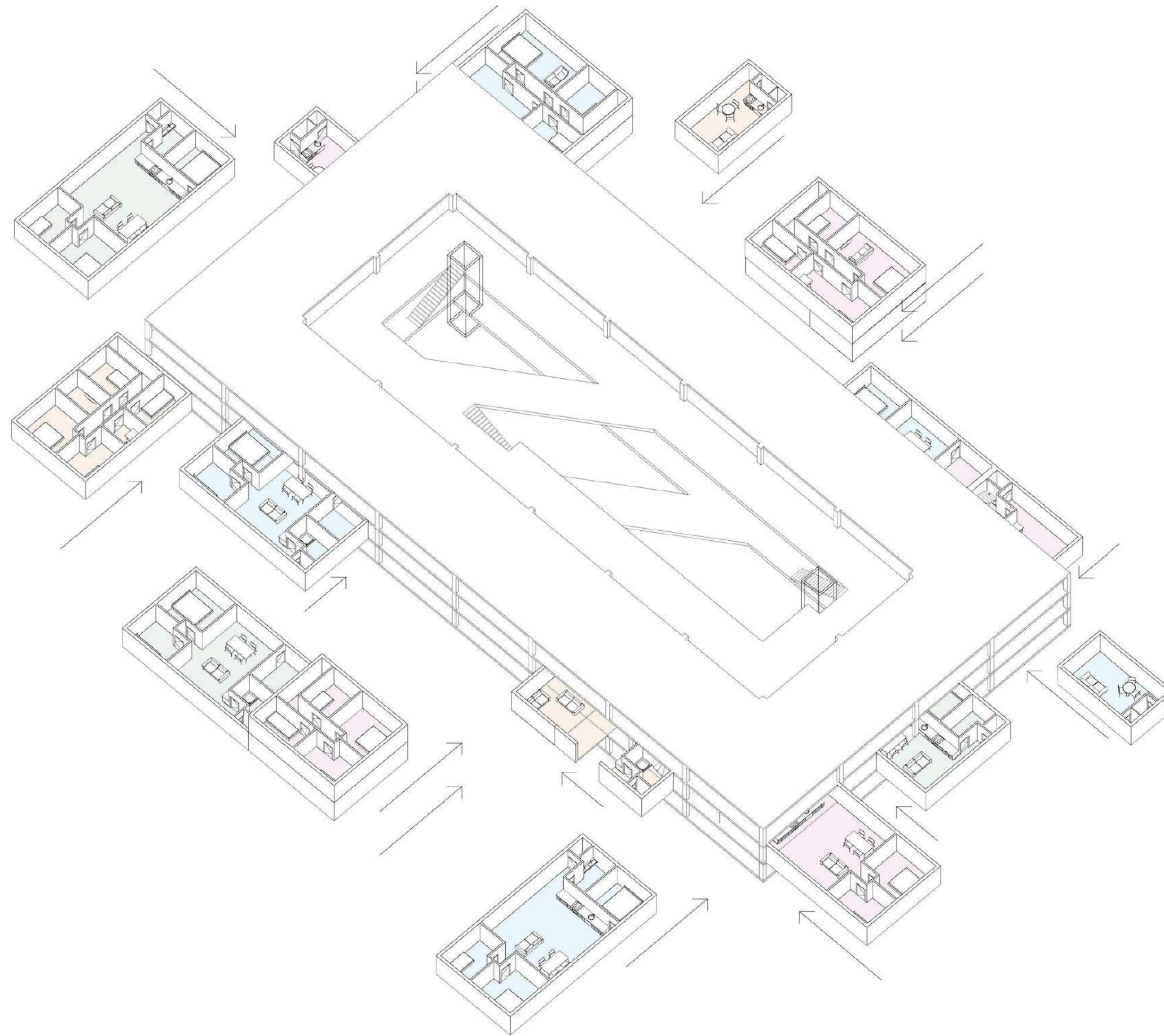
- Introvert vs. Extravert building type
- Individual preferences inhabitants
- Modular living units
- Location in masterplan (views)
- Materiality exterior unit
- Flexible exterior organisation
- Various activities on site
- Green park atmosphere
- Sustainable lifestyle



Modular housing system units



Main concept - Industrial framework + prefabricated intelligent (housing) modules



[illegible]

Introvert vs. Extrovert building type



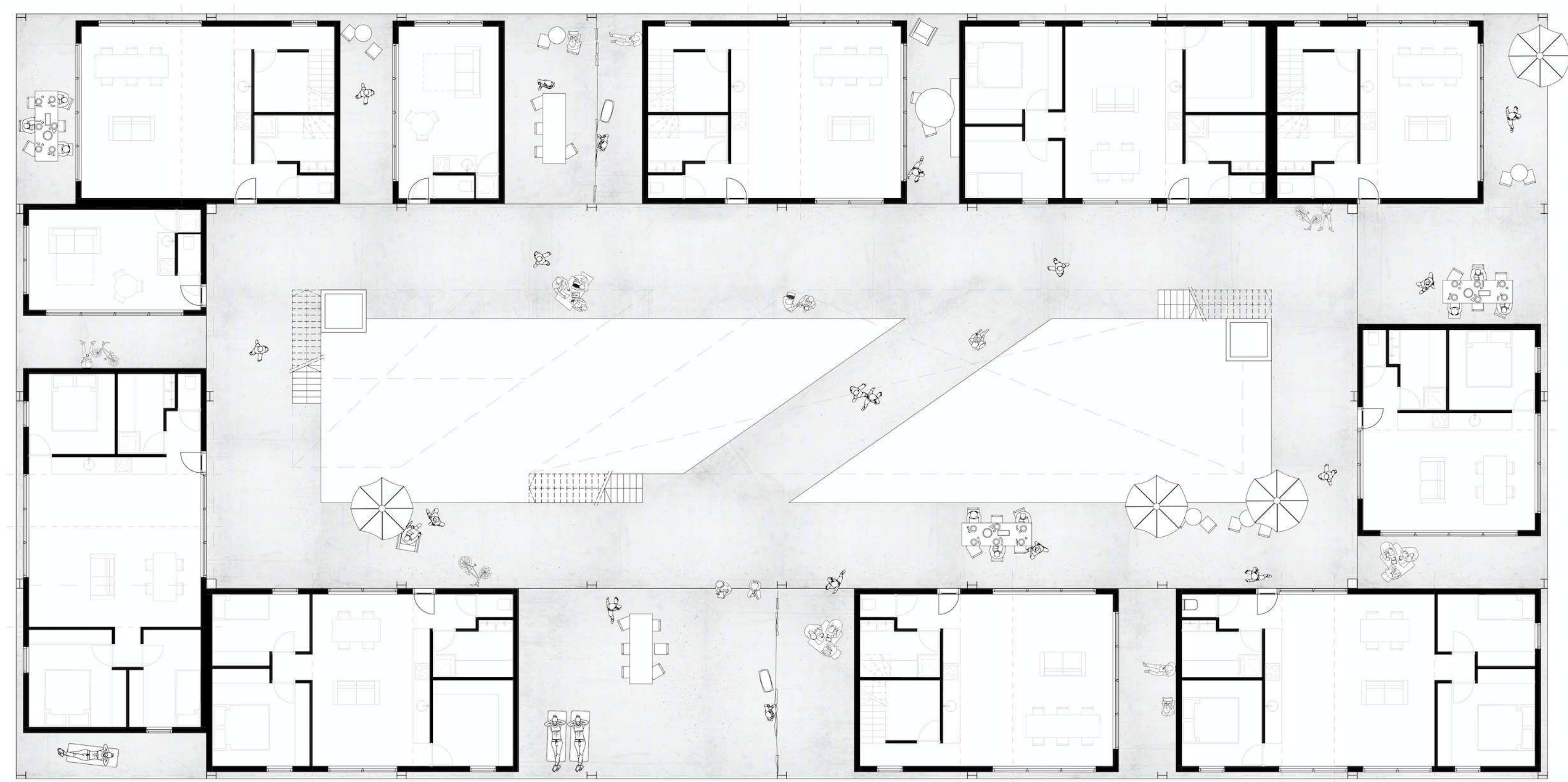
Introvert building type





Interior Render - Introvert building type

Introvert building type



Extrovert building type



Extrovert building type



Common spaces (between units)



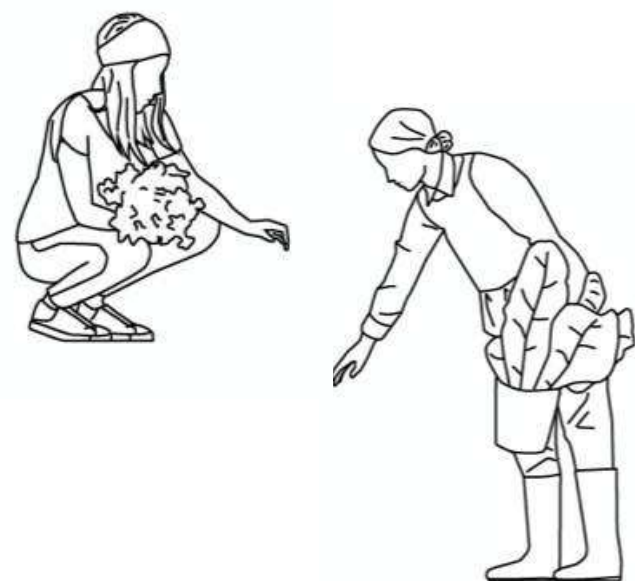
Painting / Street artist



Reading / Studying



Meeting / working



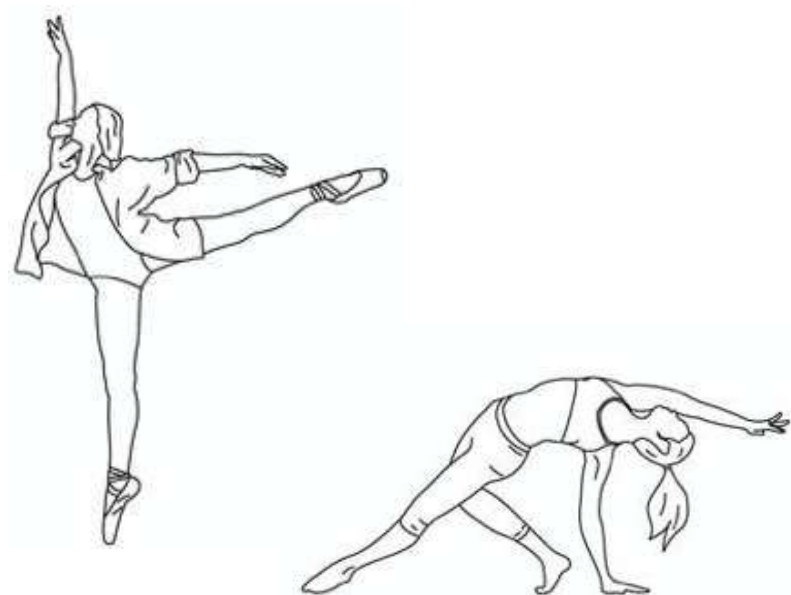
Urban farming



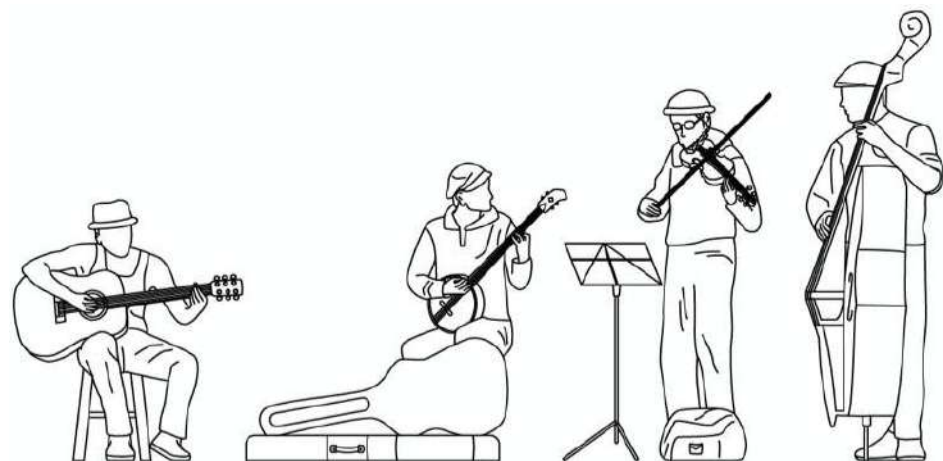
Playing music



Relaxing / Yoga / Meditating



Dancing / Stretching



Small concerts

Green park activities



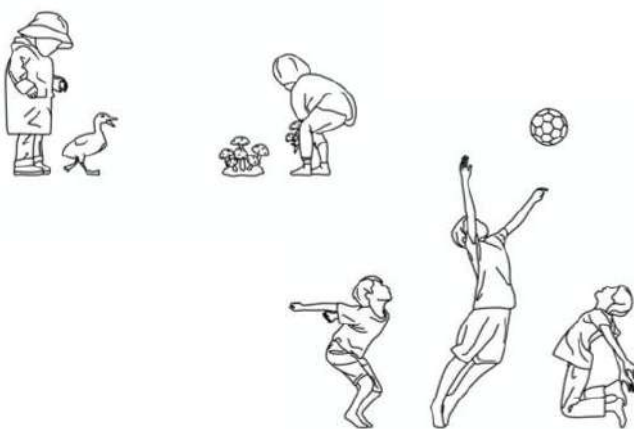
Wandering / Exploring



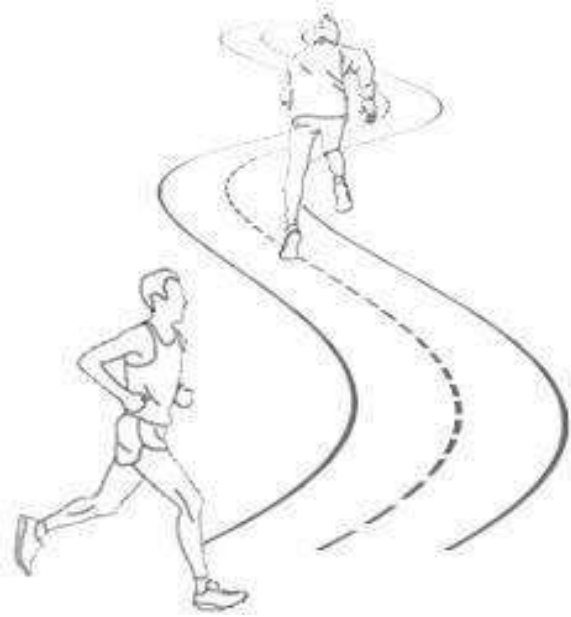
Biking / Enjoying nature



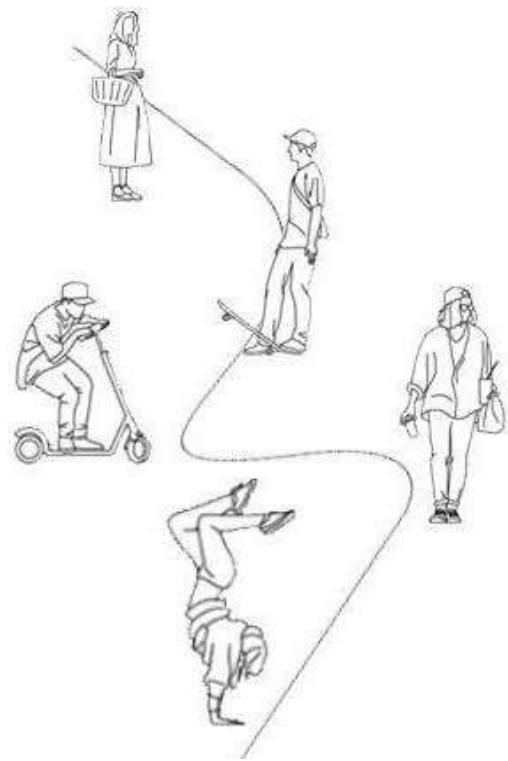
Picnicking / Barbecuing



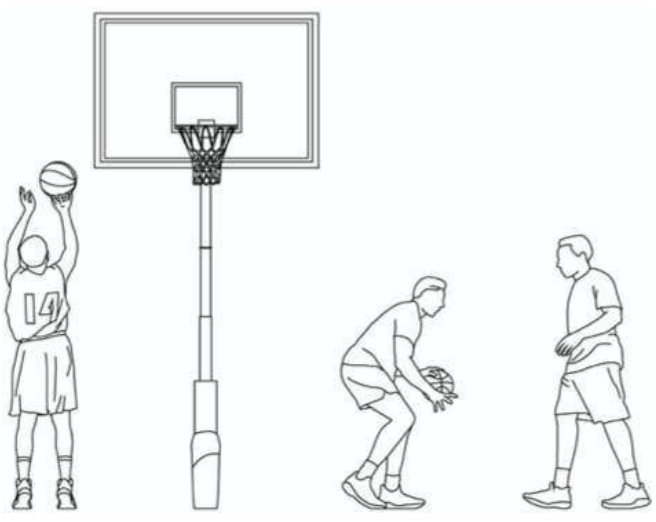
Kids playing



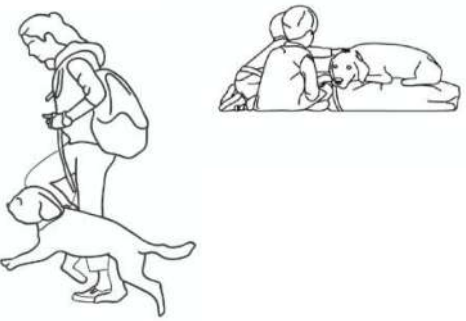
Running / Nordic Walking



Other sports / Hobby's



Basketball field



Walking your dog

Co-vivre en vert



Possibilities exterior cladding prefabricated unit

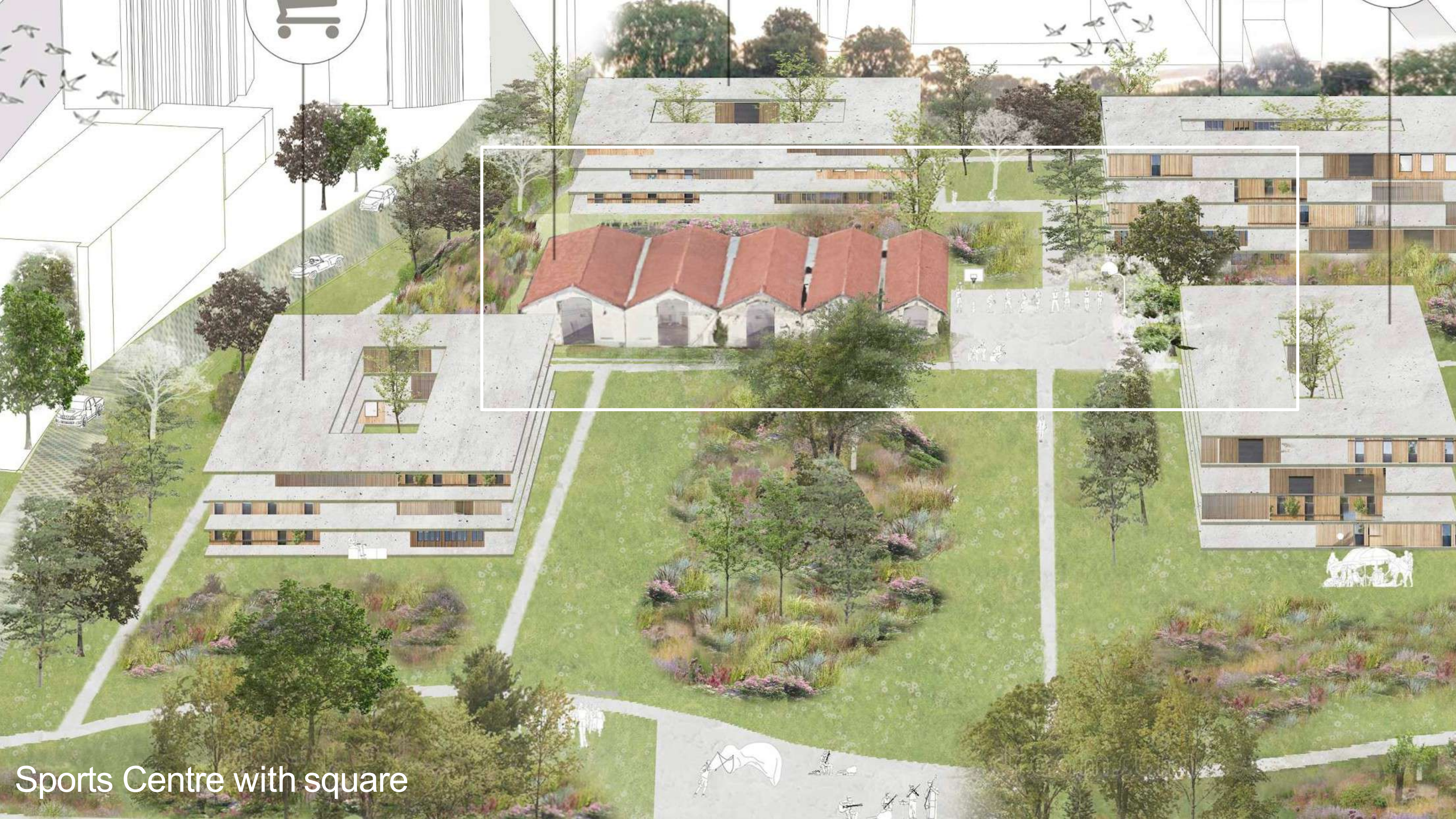




HERITAGE BUILDINGS

Repurposing Heritage Buildings

- Same concept of placing prefabricated (insulated) wooden units inside, is used for school and repurposing heritage buildings -> industrial character stays intact inside and outside
- Very flexible solution for a variety of functions (flexibility)
- Very adaptable when necessary in the future (adaptability)
- Very easy to remove when wanted (circularity)
- Instant solution for thermal, acoustic, visual and air comfort (prefabricated all-in-one solution)



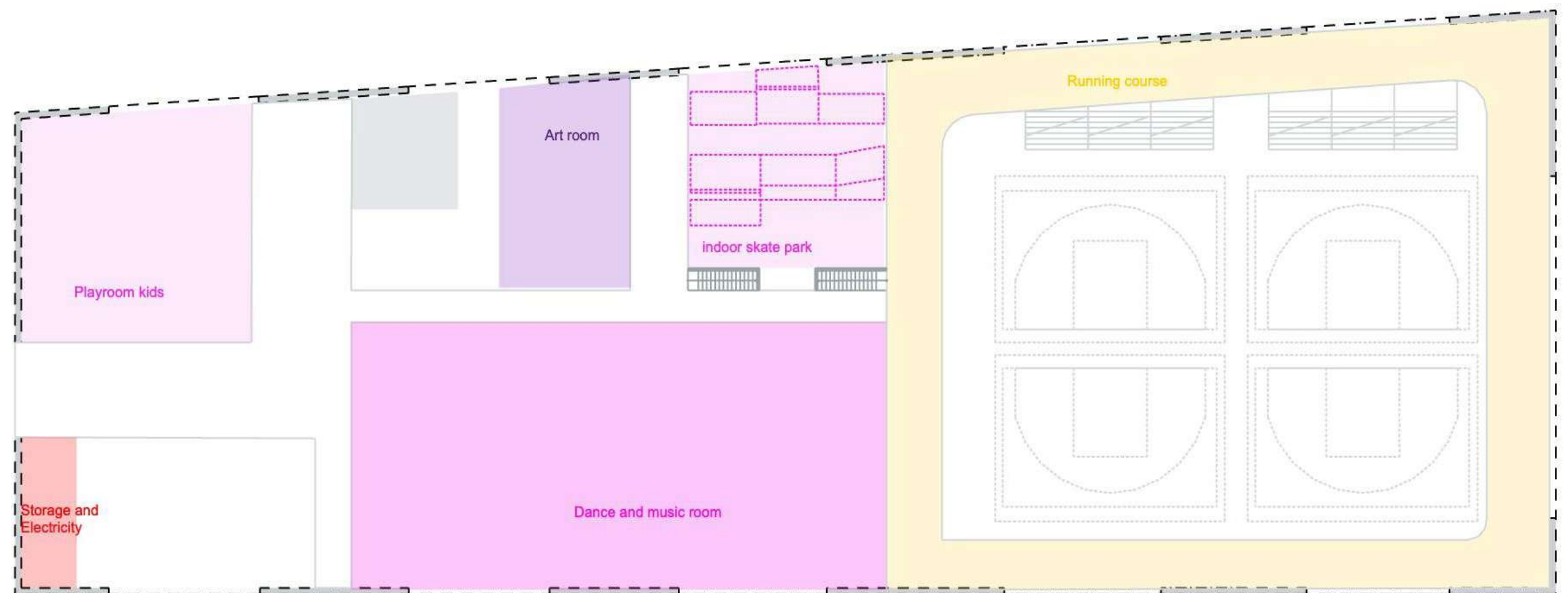
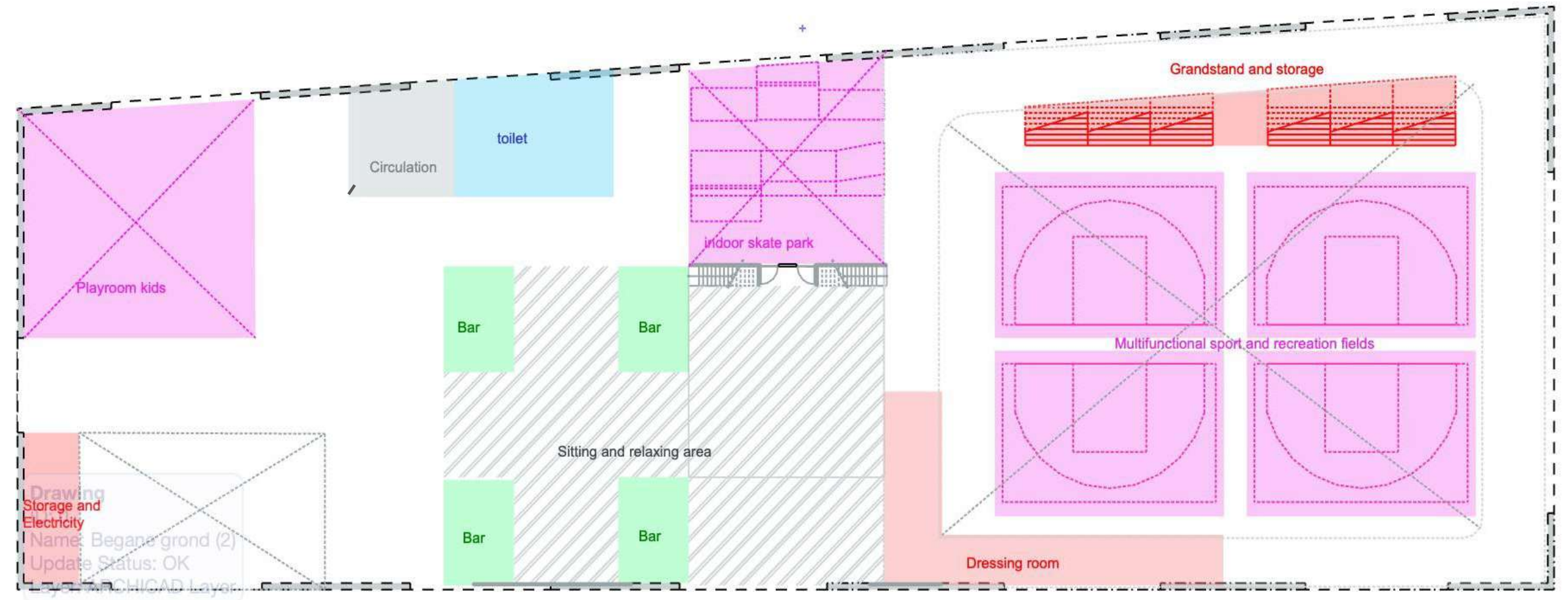
Sports Centre with square

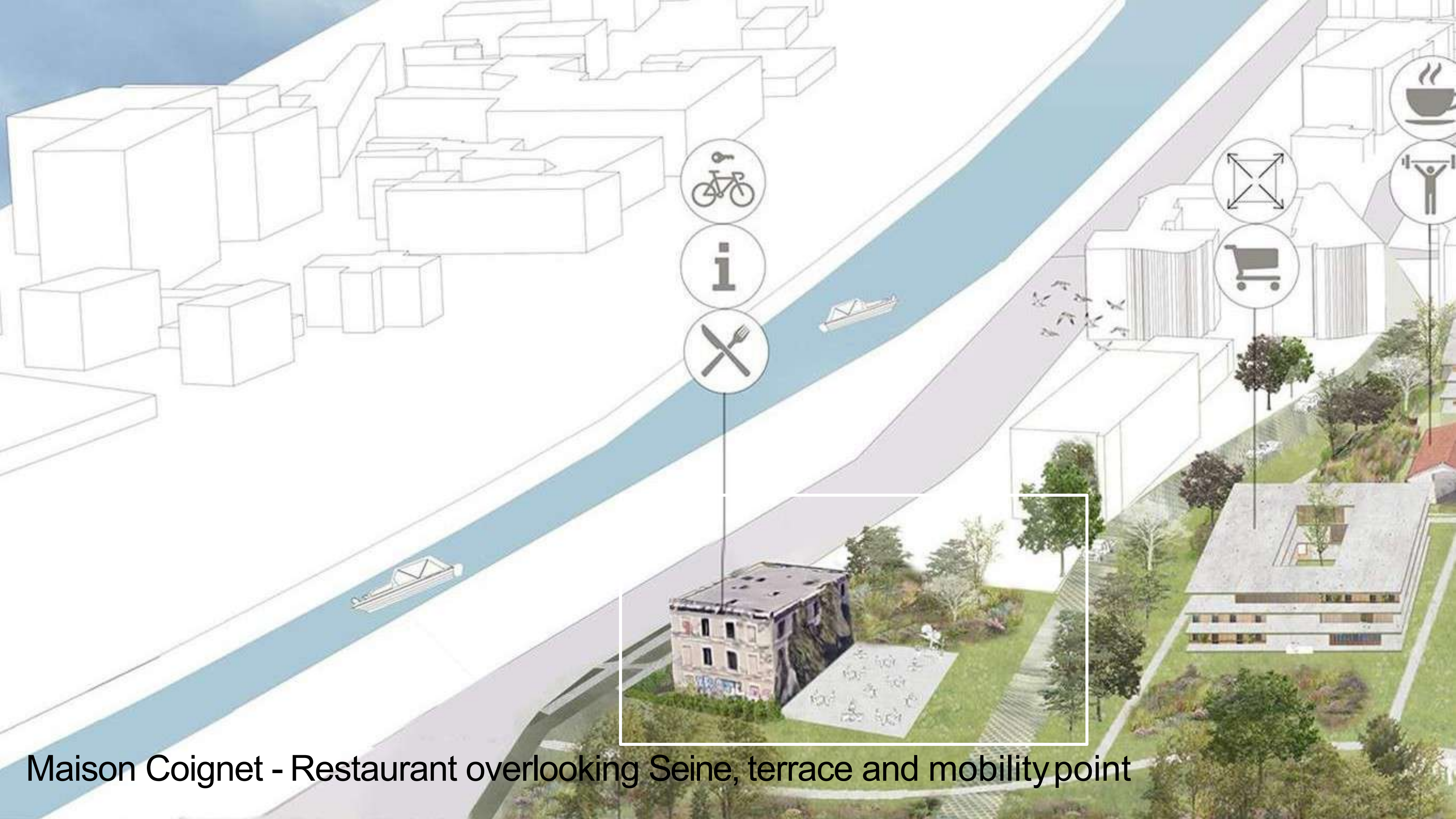
Sports Centre Interior



Sports Centre floor plan

- Building volume ideal for sport and recreation facilities
- Same concept of placing prefabricated (insulated) wooden units inside existing structure
- Easy configuration sport, art rooms and shared rooms in between (3D composition + walking bridges, very dynamic)





Maison Coignet - Restaurant overlooking Seine, terrace and mobility point



Repurposing principle Maison Coignet
Render from the outside with open elevation

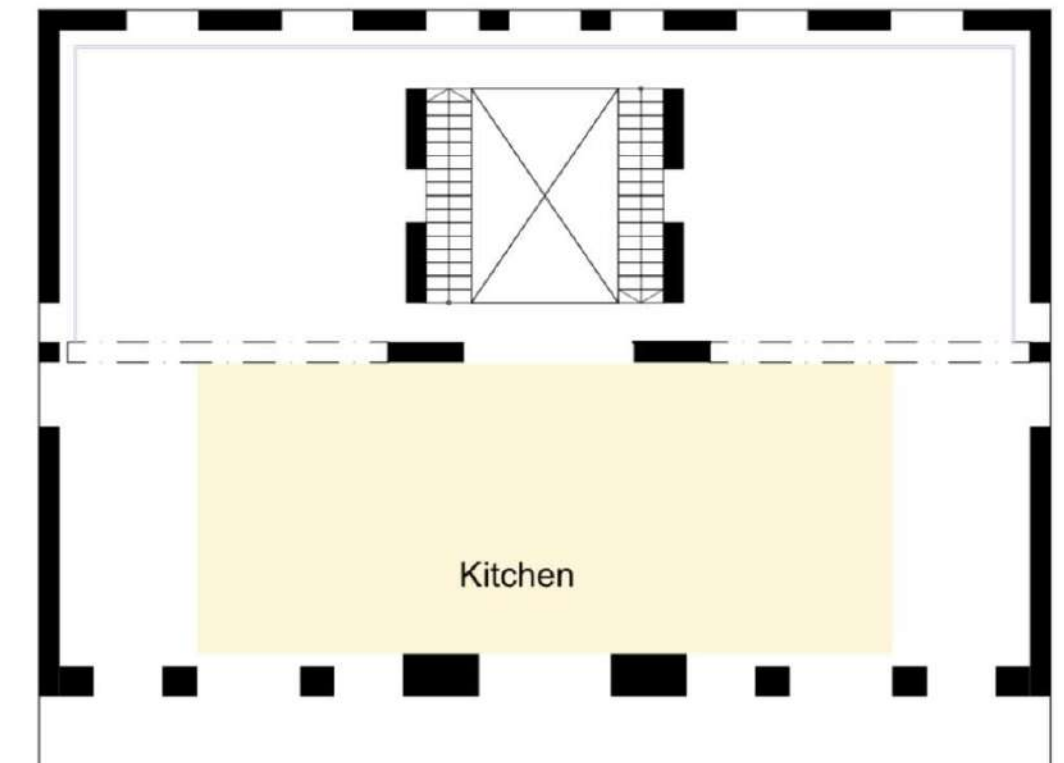
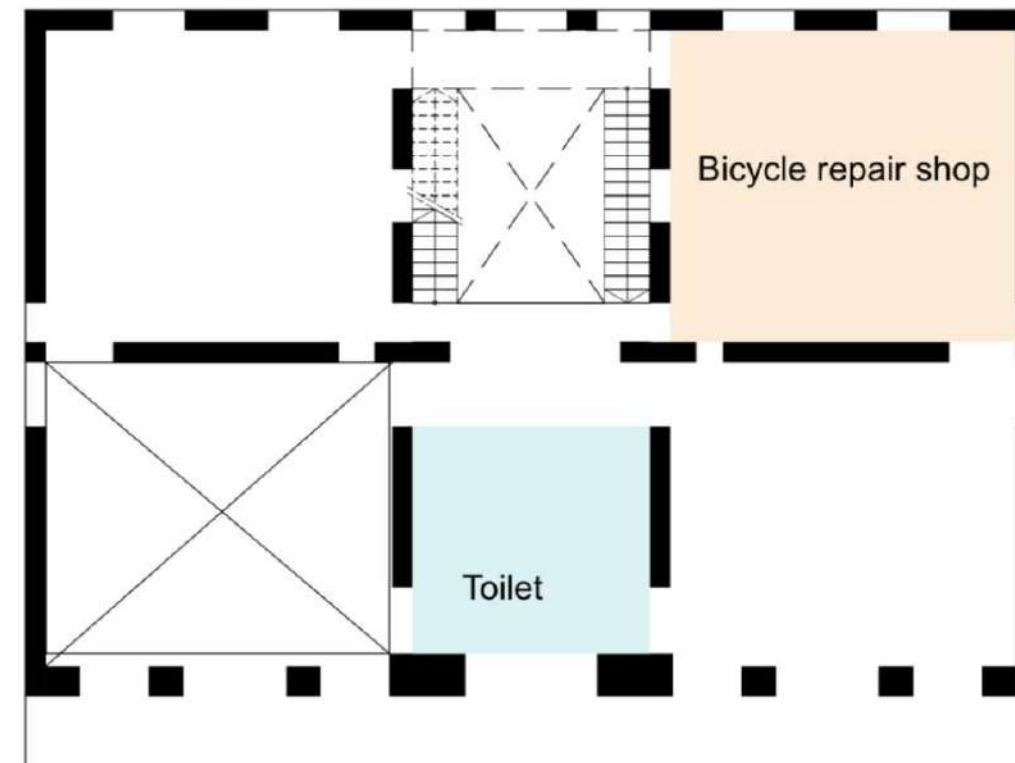
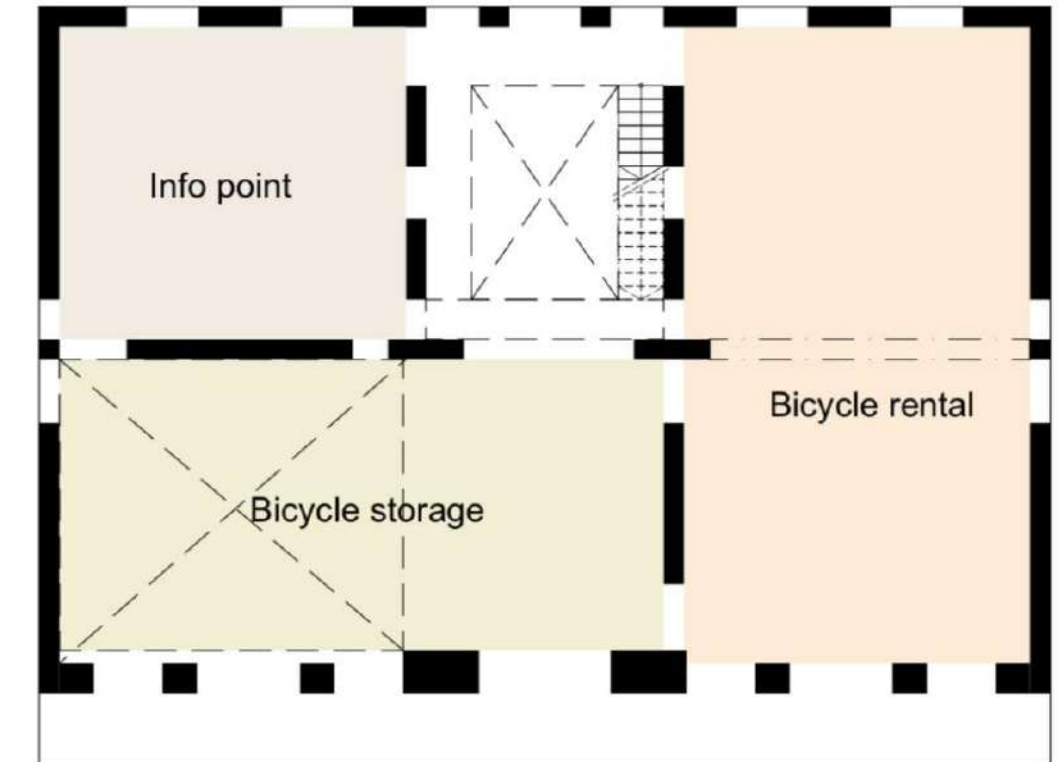
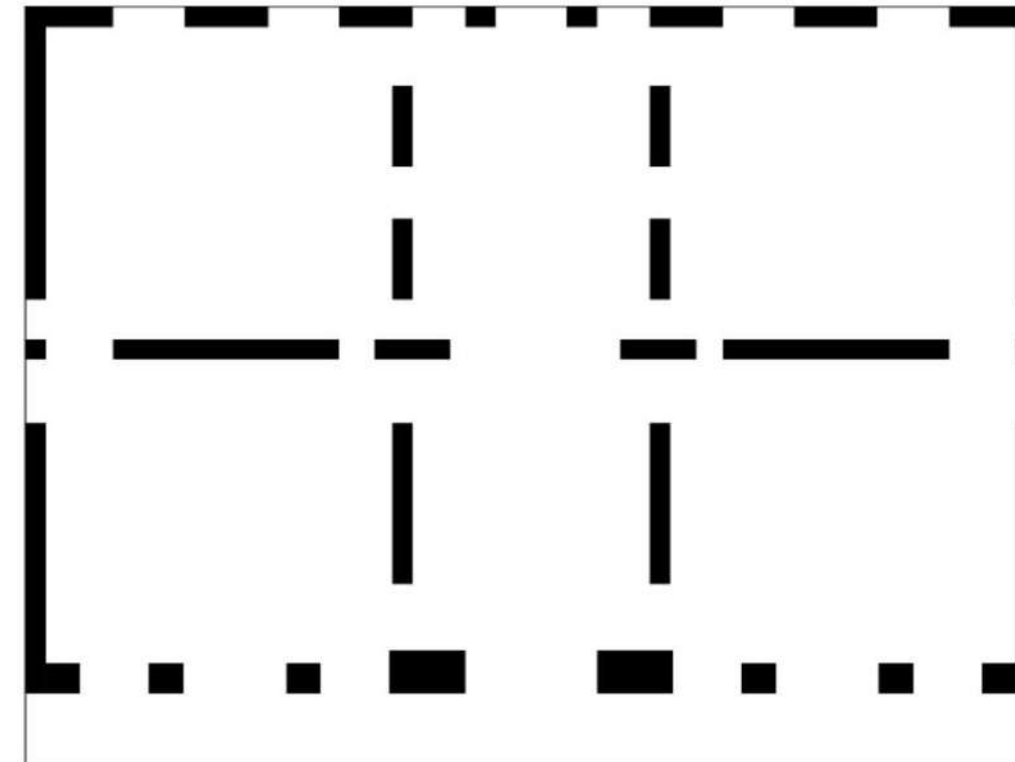


Repurposing principle Maison Coignet

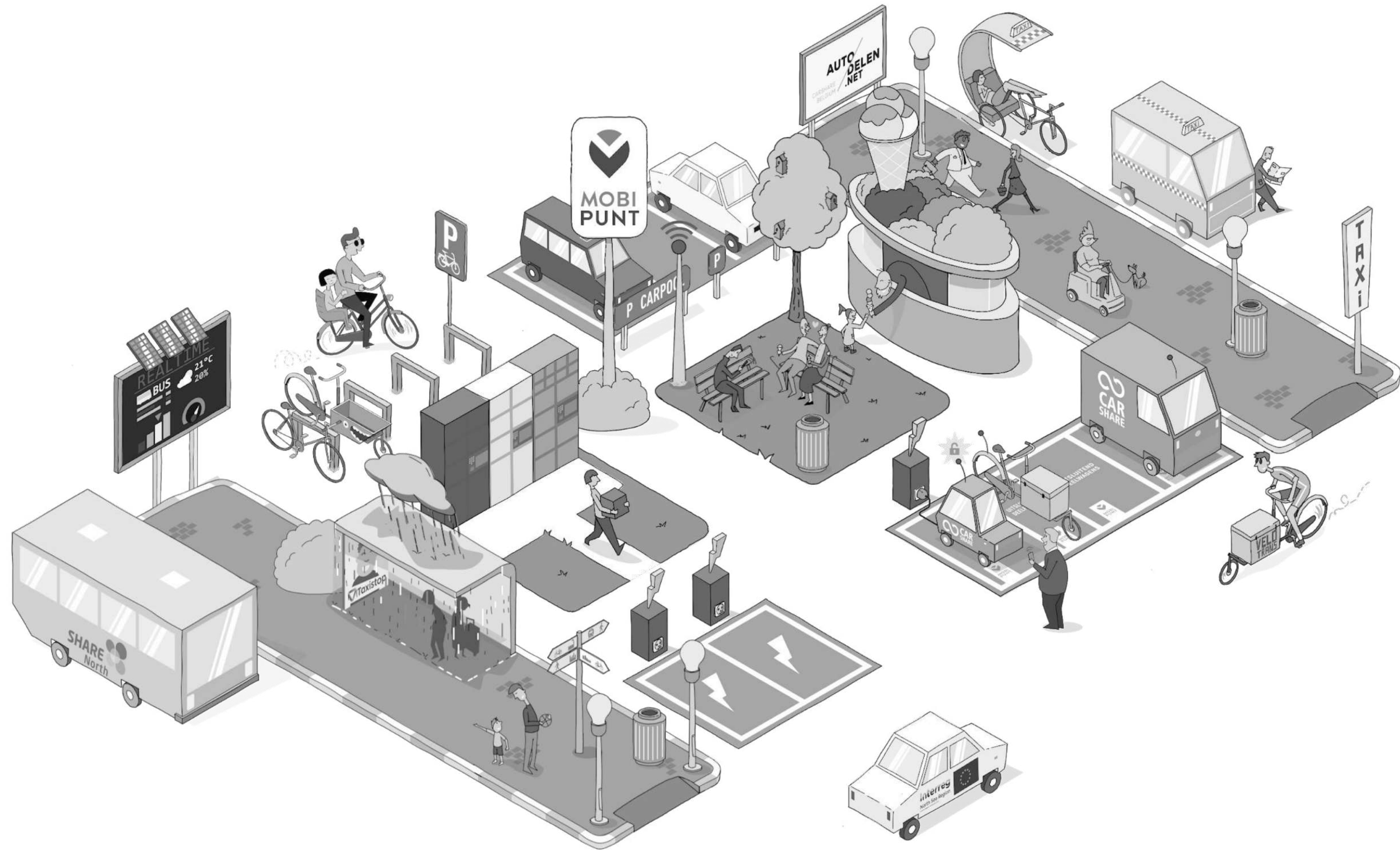
Render from the outside - entrance stairs

Maison Coignet floor plan

- Filling in the original structure of Maison Coignet with prefabricated wooden elements
- Creating an important community point
 - Bicycle repair shop
 - Mobility point
 - Small restaurant
 - Terraces outside



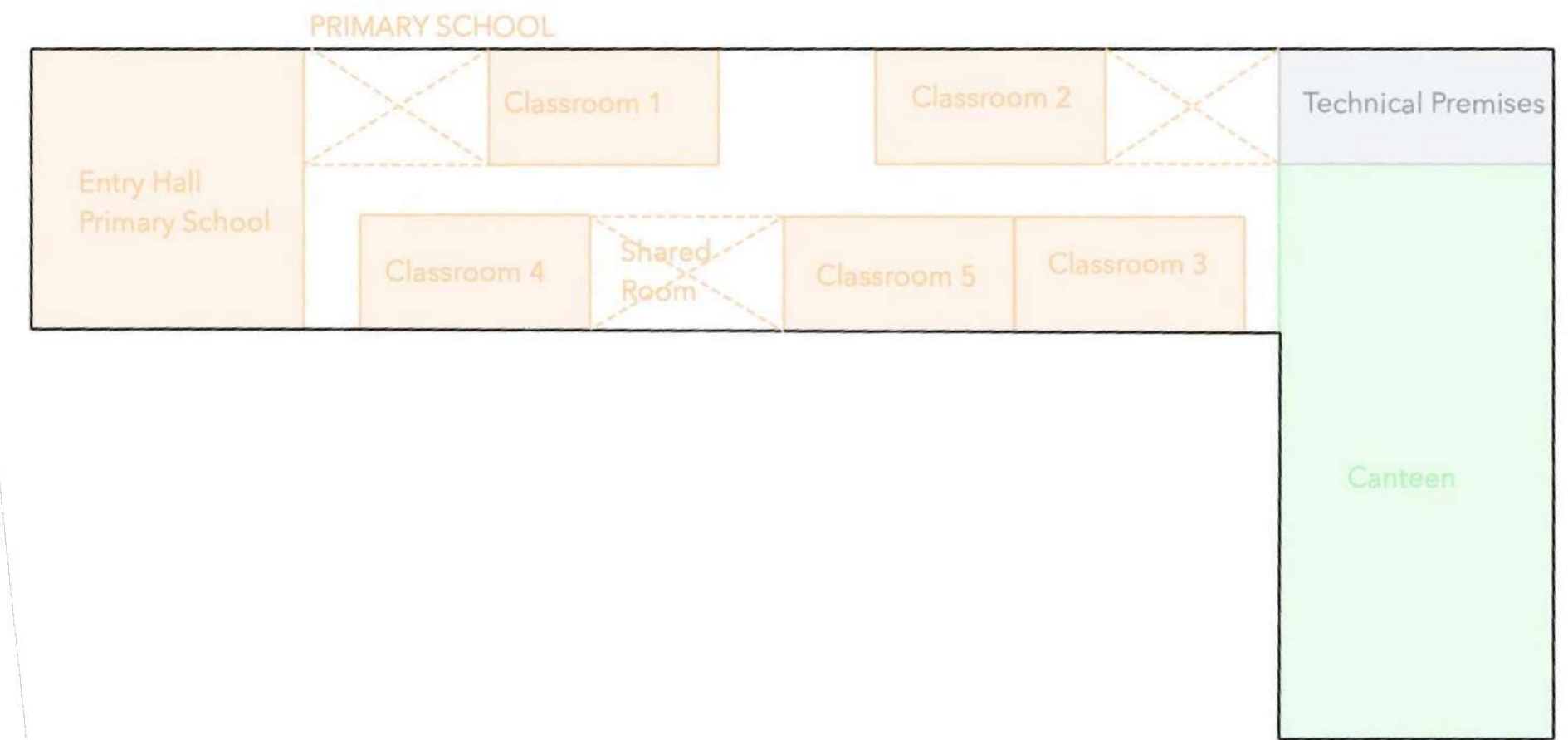
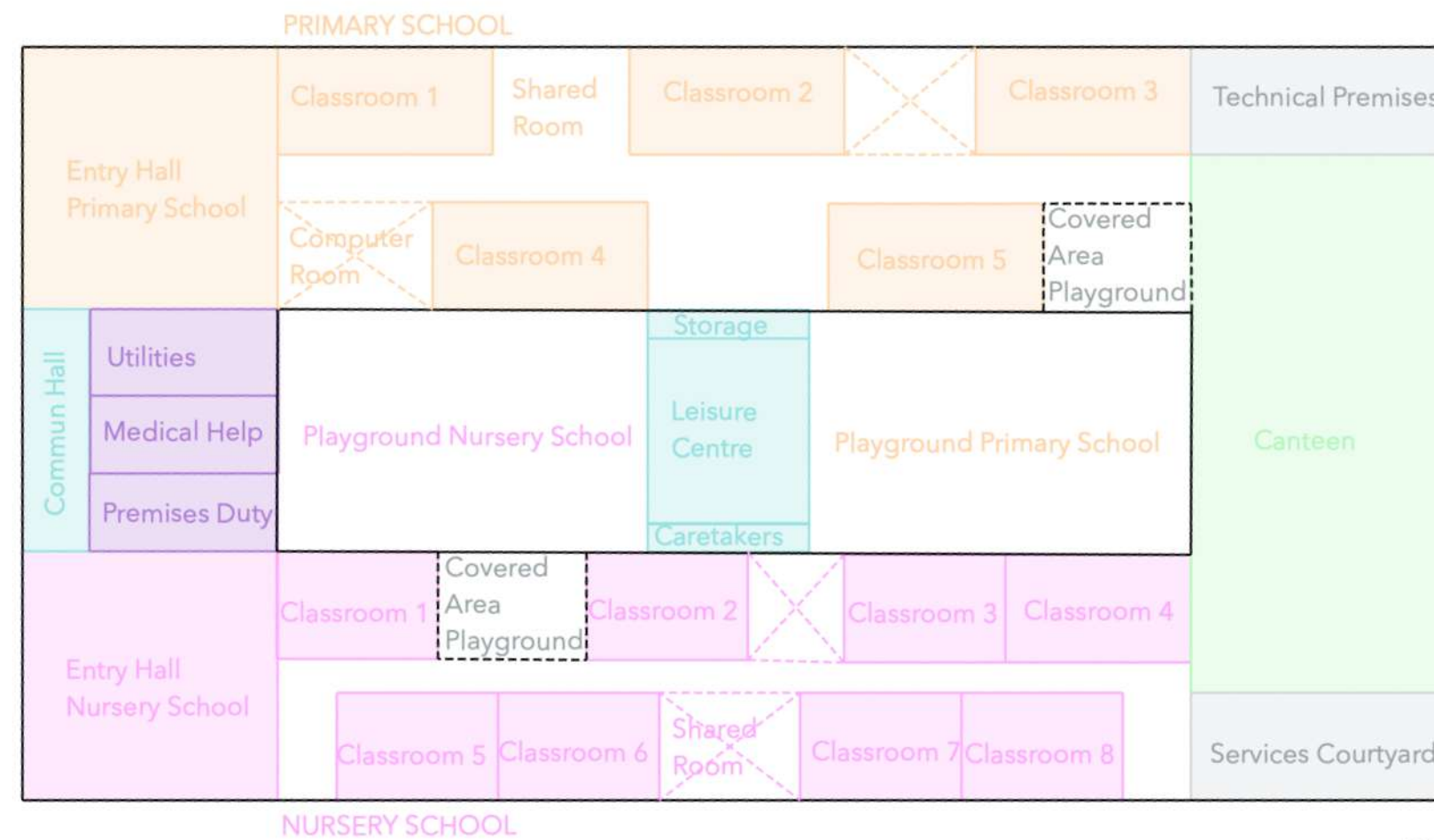
Mobility point - Connection to station and centre of Paris



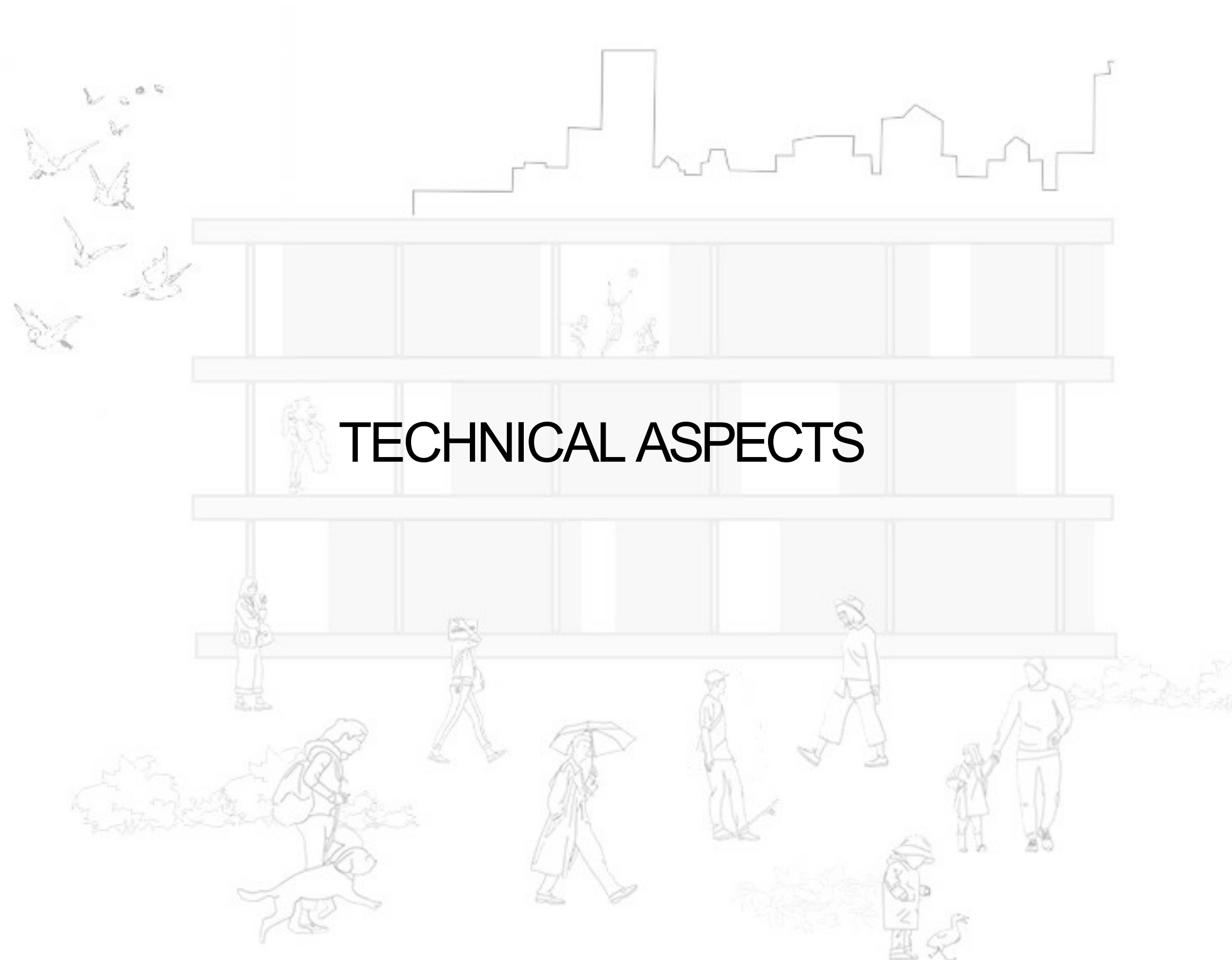


Primary, Nursery School and Leisure Centre

Primary & Nursery School

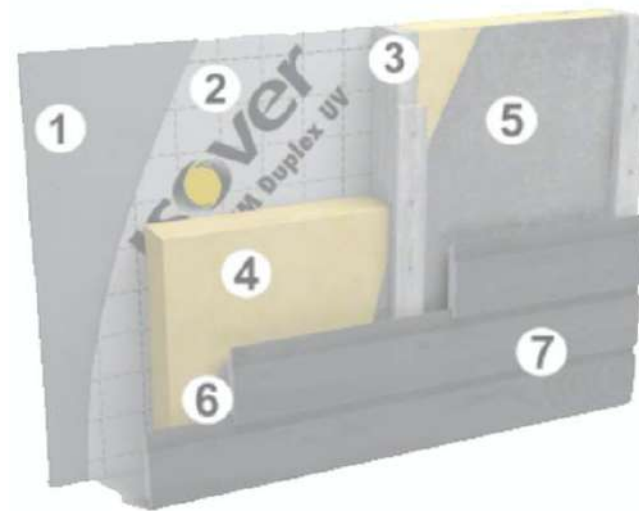


- Building volume ideal for separate wing Primary School and Nursery School + playgrounds
- Same concept of placing prefabricated (insulated) wooden classrooms/other functions
- Easy configuration classrooms and shared rooms in between (3D composition + walking bridges, very dynamic learning space)



TECHNICAL ASPECTS

Feel...



ISOVER
SAINT-GOBAIN

1. Gyproc plasterplate
2. Vario KM Duplex UV
3. Wooden framework
4. Comfortpanel
5. Systemroll 400/700/1000
6. Water-resistant, vapor-permeable film
7. Ventilated air cavity
9. Wooden facade finishing

SYSTEMROLL



high thermal insulation value



non-flammable (fire safety)



good accoustic insulation



prefabricated, compressed blankets take up less space during transportation

ISOVER
SAINT-GOBAIN



VARIO KM DUPLEX UV

climate sensitive vapor-permeable film
(responds to relative humidity)



condensated moisture can dry faster



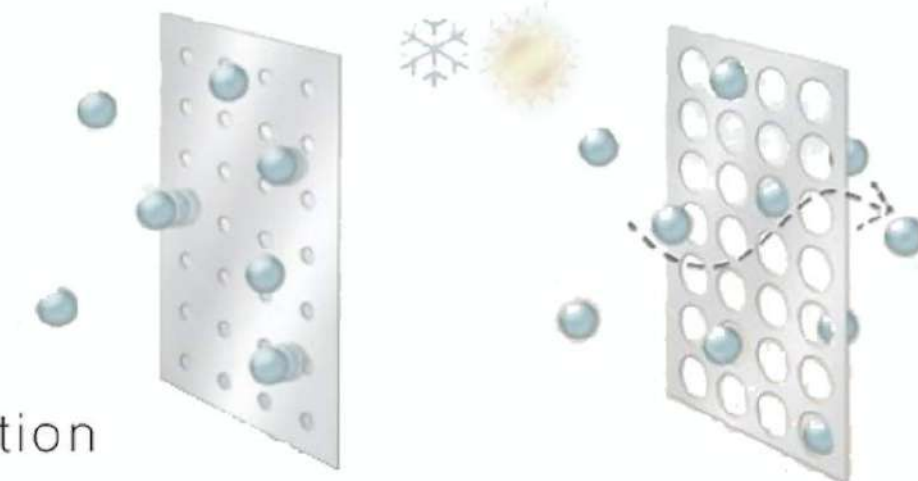
prevents (wet) damage of wooden construction

easy to build airtight

winter

vs.

summer



See...

CLIMATOP XN :
PLANITHERM XN coating op zijde 2 en 5.
+ helder
PLANICLEAR

Buiten

Binnen

T_L: 74 %
R_L: 14 %
g: 54 %

+20 °C

* U_g-waarde:
0.6 W/m²K met Argon 15mm
0.5 W/m²K met Krypton 12mm of Argon 18mm

SAINT-GOBAIN

PLANITHERM SERIES

- winter comfort
- sustainable
- day light comfort
- energy saving
- design

SAINT-GOBAIN

Existing Window Glass

Solar Film

New Glass

Perforation to Expose Dessicant

Signa Spacer

Primary Sealant Vapor Barrier

Dessicant Absorbs Moisture

Matching Trim

Heating Wire

Secondary Sealant

Original Casement

ECLAZ ONE TRIPLE GLAZING

- summer comfort
- winter comfort
- visual comfort
- energy saving

FLEXIBLE SUN SHADING SYSTEM

MANUALE IN SAFE ALTERNATA

PROTEZIONE IN ALLUMINIO DA 1.3 mm, PRESSIONE ALTA 10-15 MPa, ISOLAMENTO INTERNO IN EPS

PROTEZIONE IN CRIP IN CLORURO POLIETILENE

GUARNIZIONE LATERALE COSSUCCI, IN STOFFA POLIURETANICA

PNEUMAZIONE PER IL RITRASSO CASSA A COMANDO

INOX

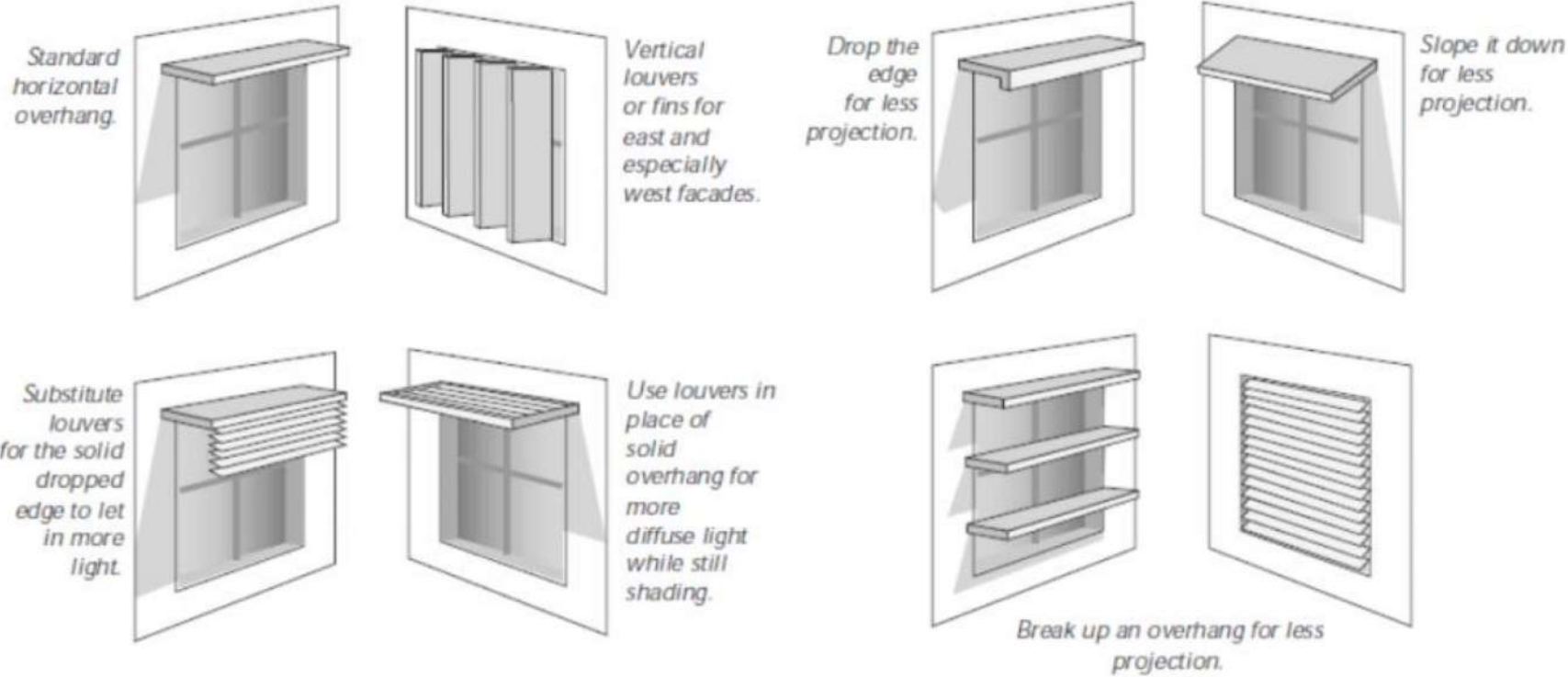
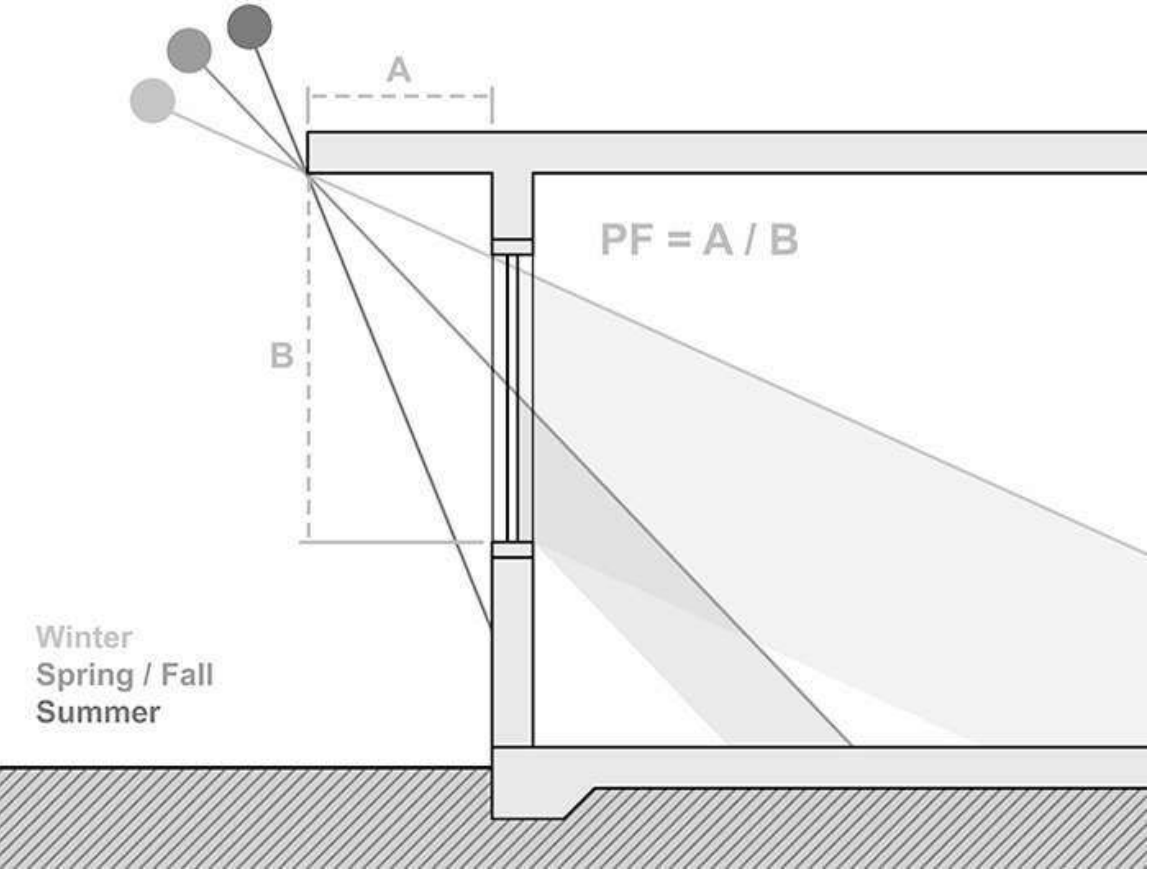
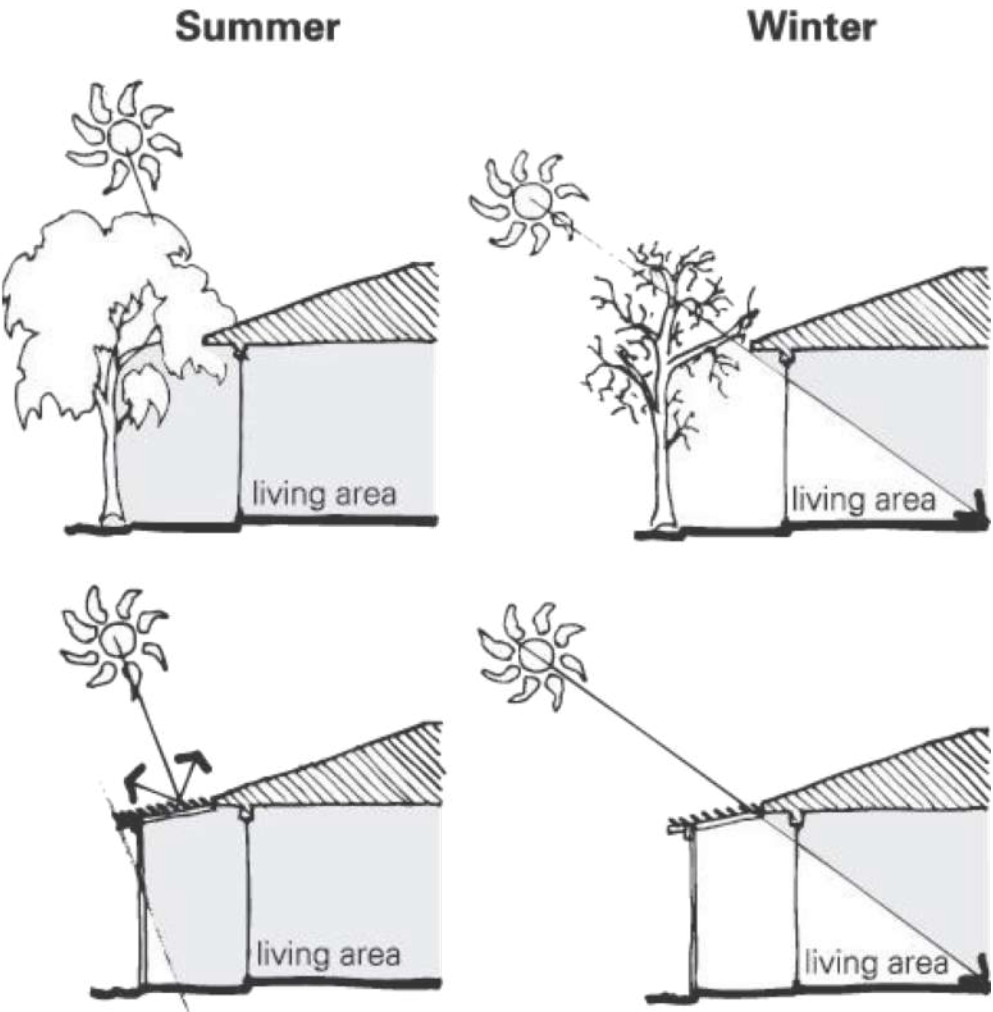
CE

MADE IN ITALY

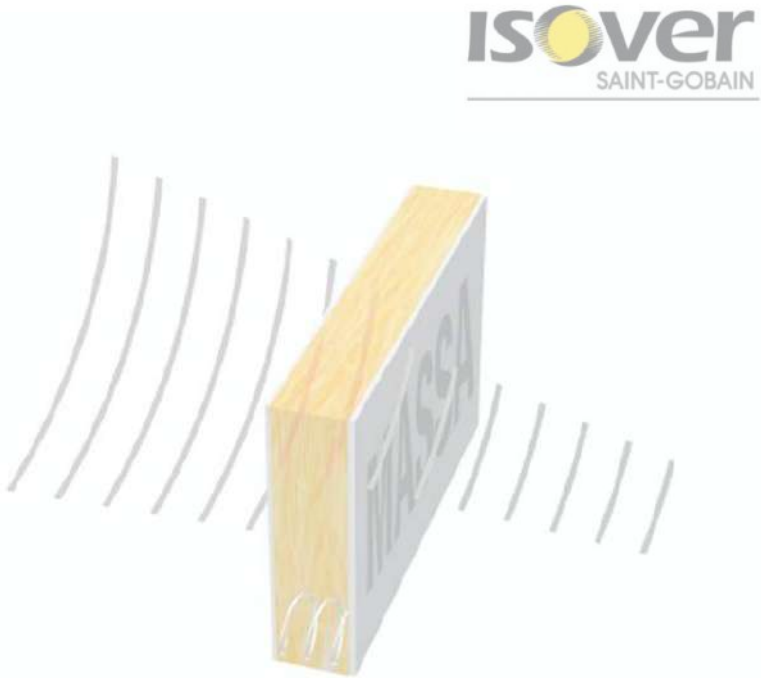
ALU



Preventing overheating inside units



Hear...



OPTIMAL ACCOUSTIC COMFORT



mass - spring - mass principle



light weight solution



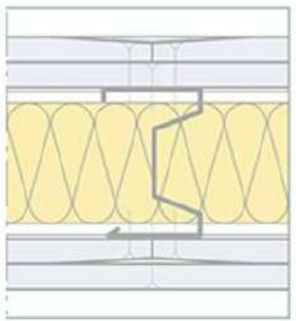
cost saving



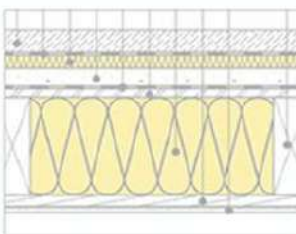
space-saving



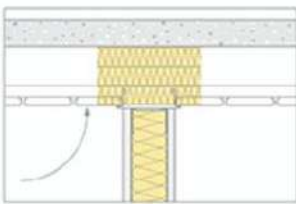
efficient solution



Decoupled profiles in a double Metal Stud skeleton: extra high sound insulation up to 78 dB

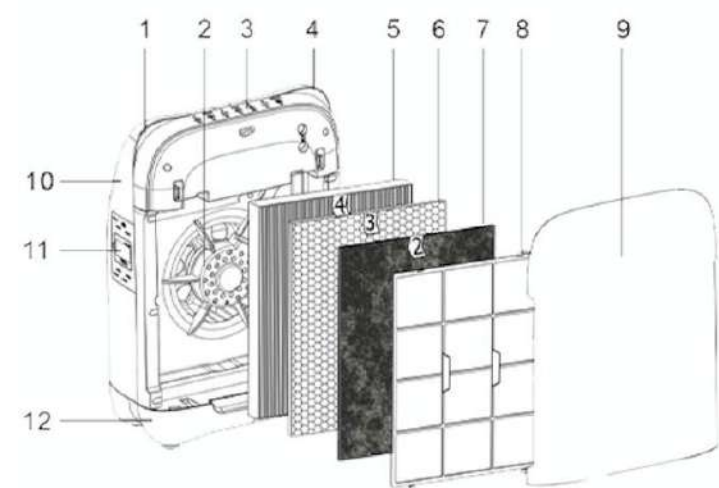


Wooden floor with floating screed improves both contact and air noise



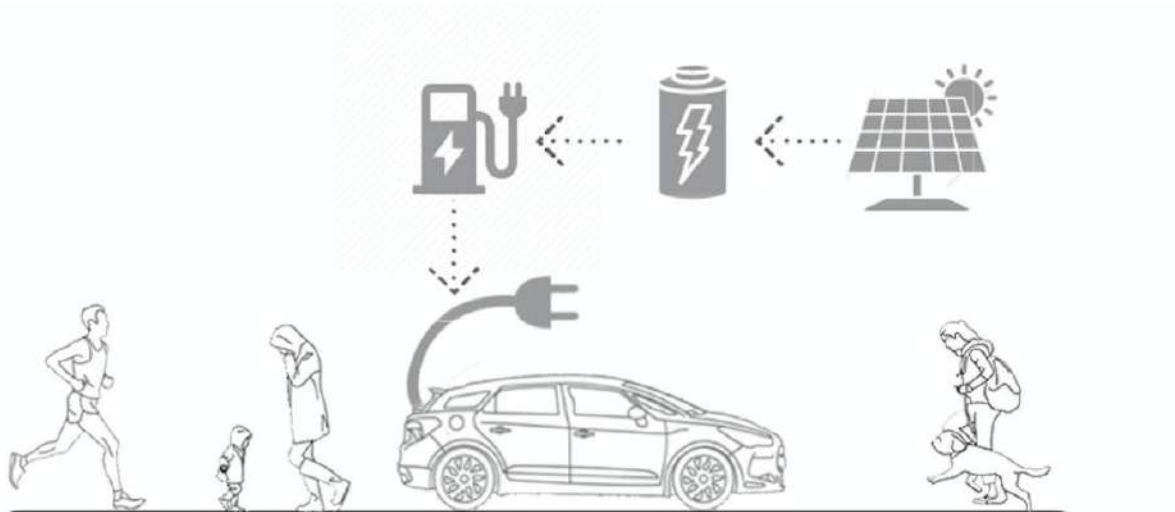
Special sound barriers above suspended ceiling to reduce longitudinal noise

Breathe...

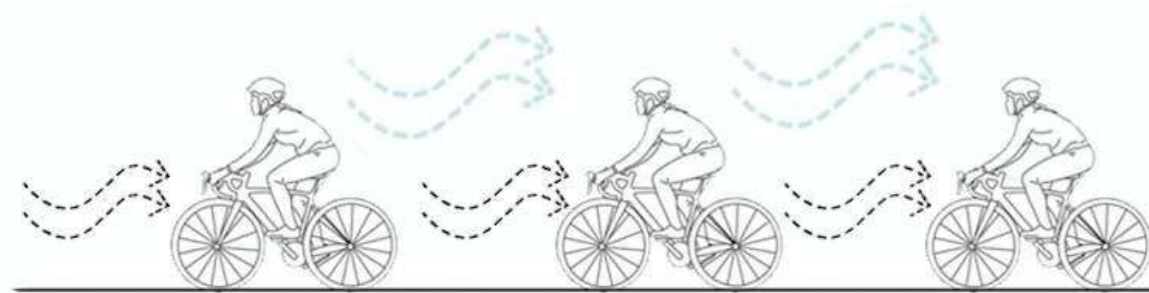


- 1. AQ indicator
- 2. Motor
- 3. Control panel
- 4. AQ indicator
- 5. HEPA filter
- 6. Activated Carbon filter
- 7. Charcoal filter
- 9. Front cover
- 10. Back Housing
- 11. Dust sensor
- 12. Base

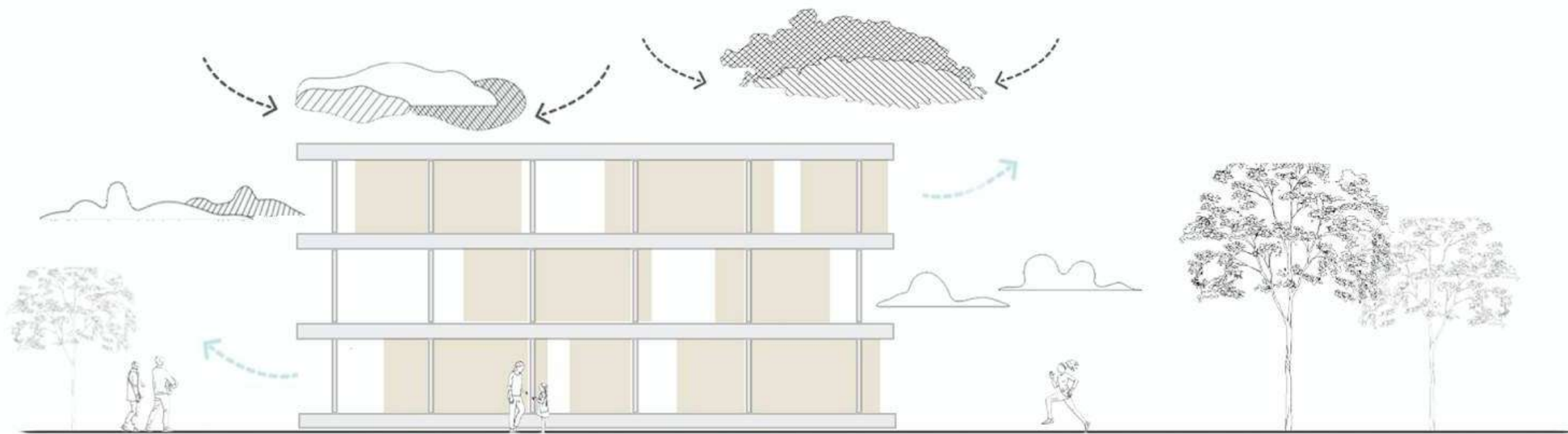
FRESH AIR SYSTEM



ELECTRIC VEHICLES - RENEWABLE, NATURAL ENERGY SOURCES

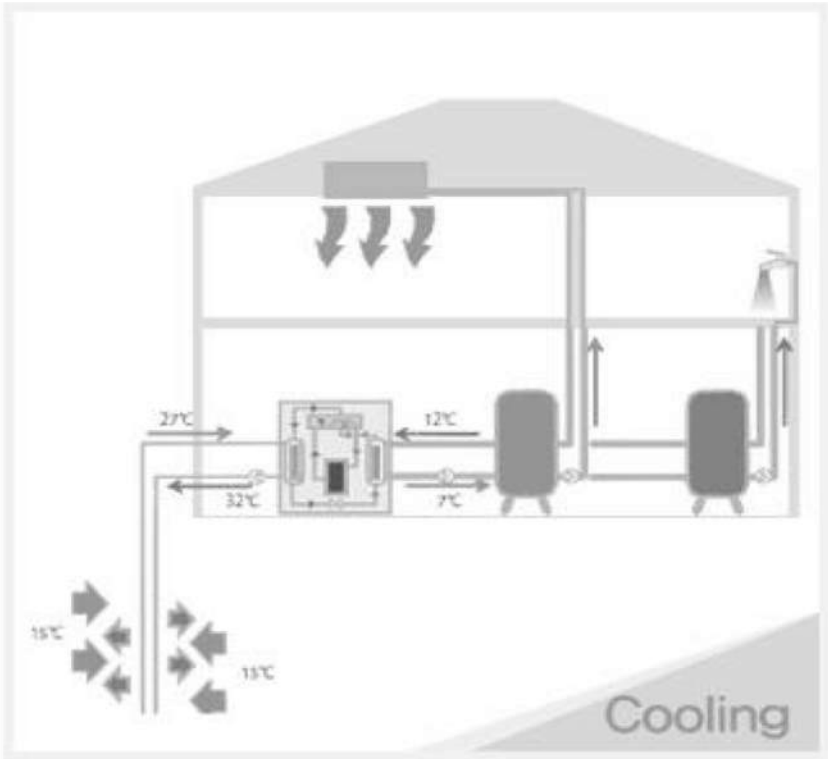
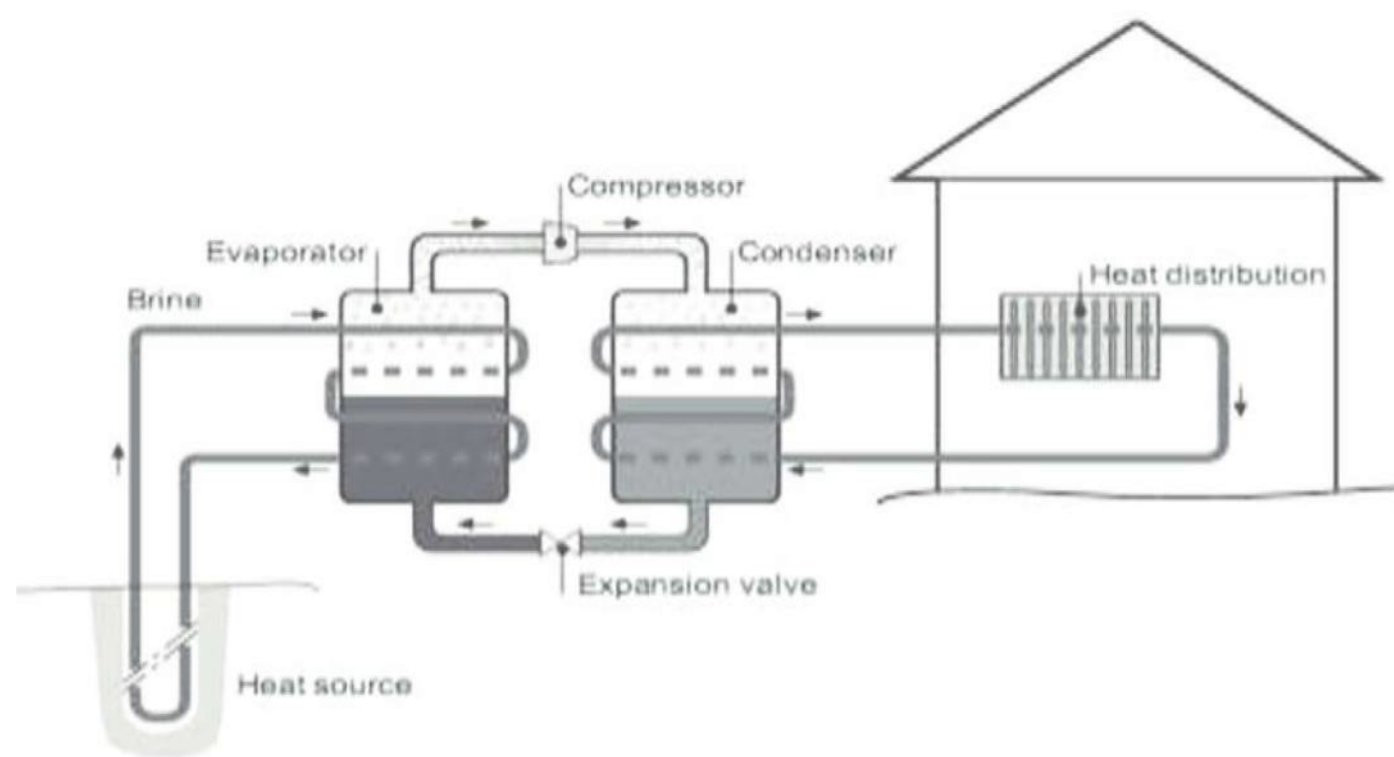


SMOG FREE BYCICLYE - COLLECTS AND CLEANS POLLUTED AIR

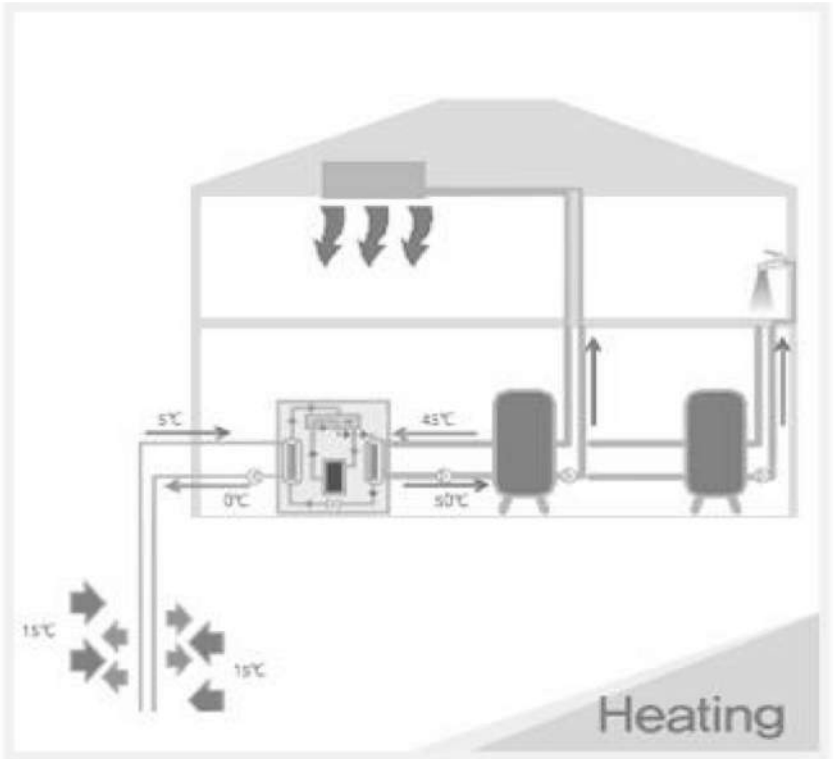


SMOG FREE BUILDING - USES PATENTED POSITIVE IONISATION TECHNOLOGY TO PRODUCE SMOG FREE AIR

Heating strategy - geothermal heating pump

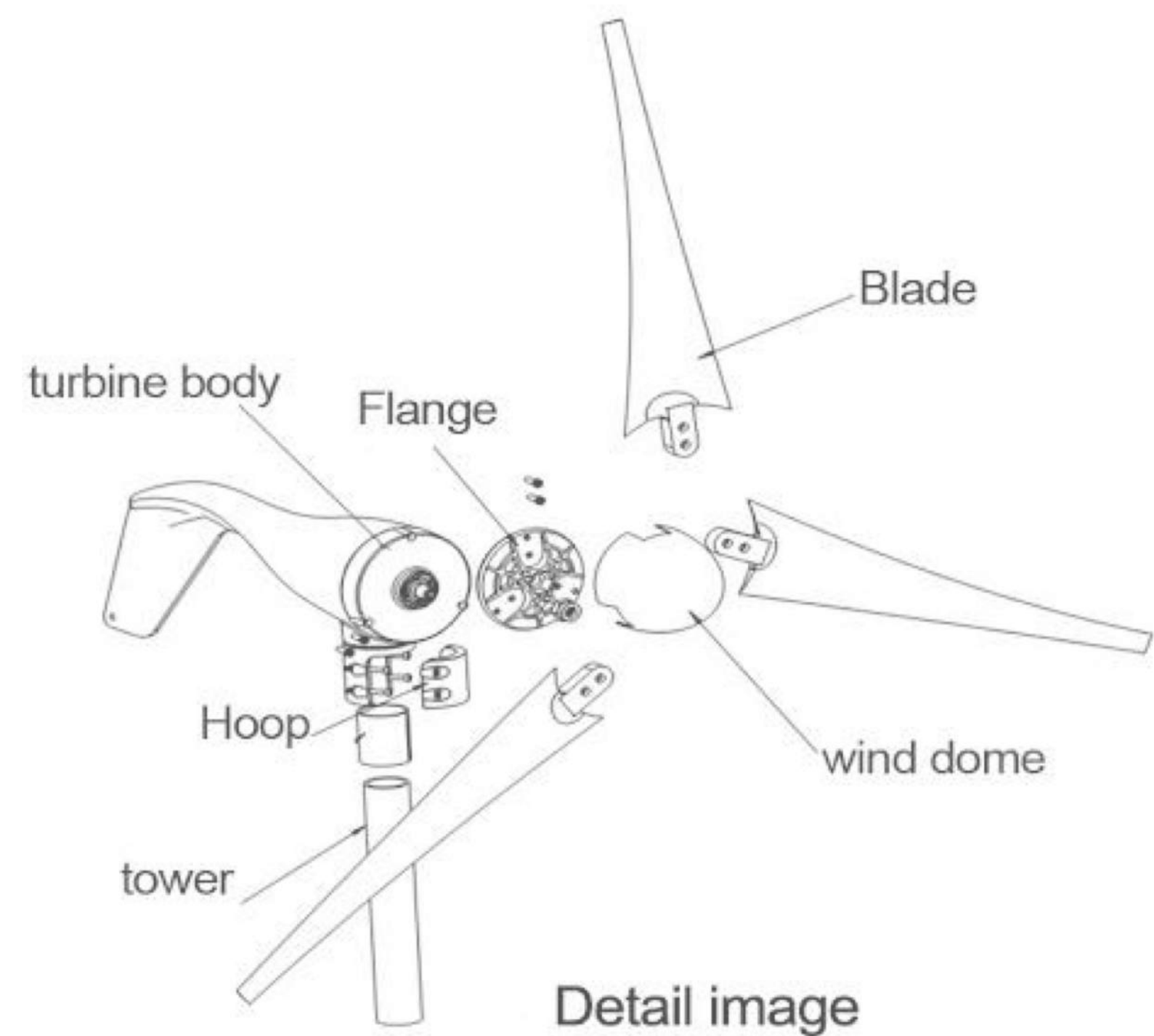
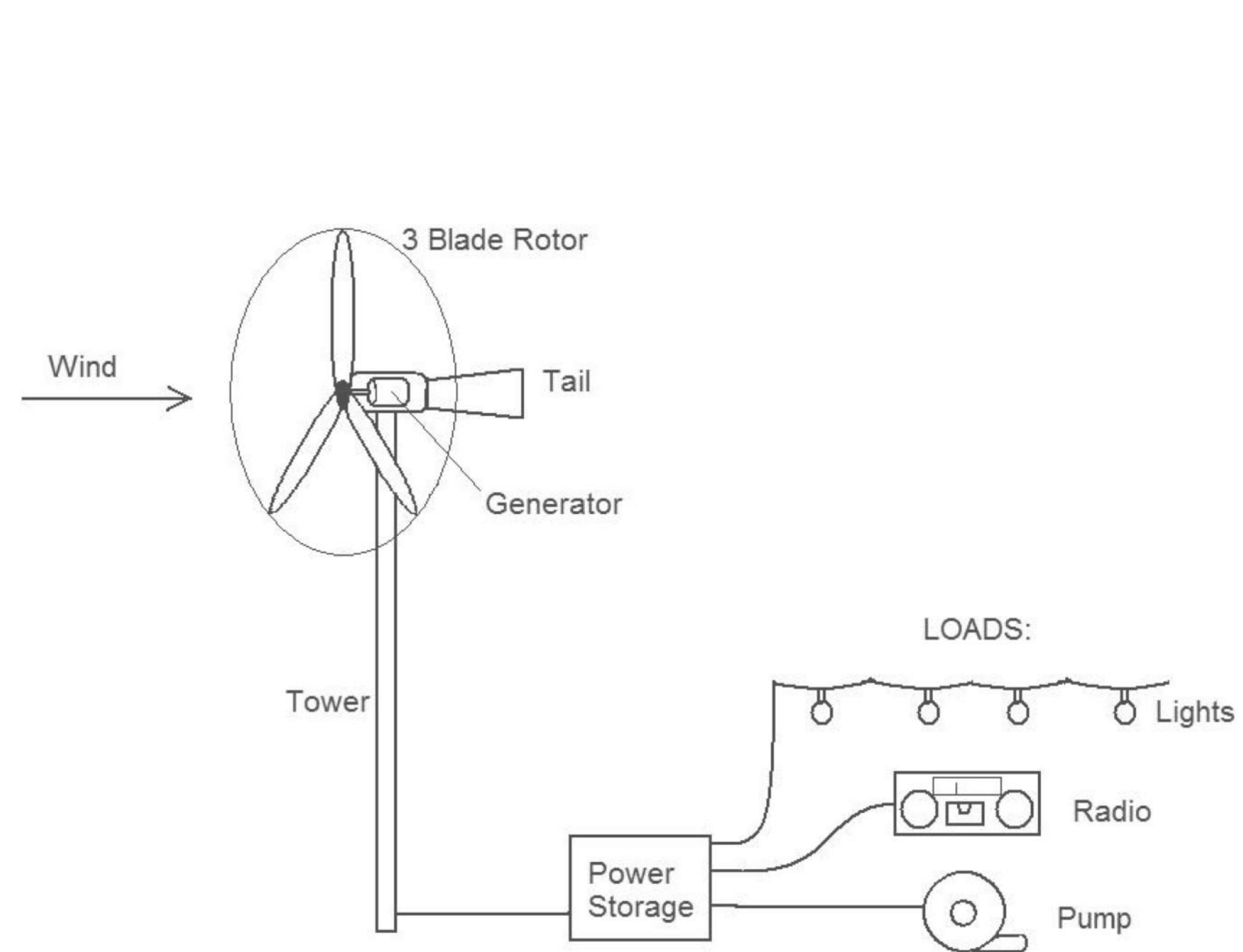


It delivers external heat to the underground and cools the indoor environment using heat pump.



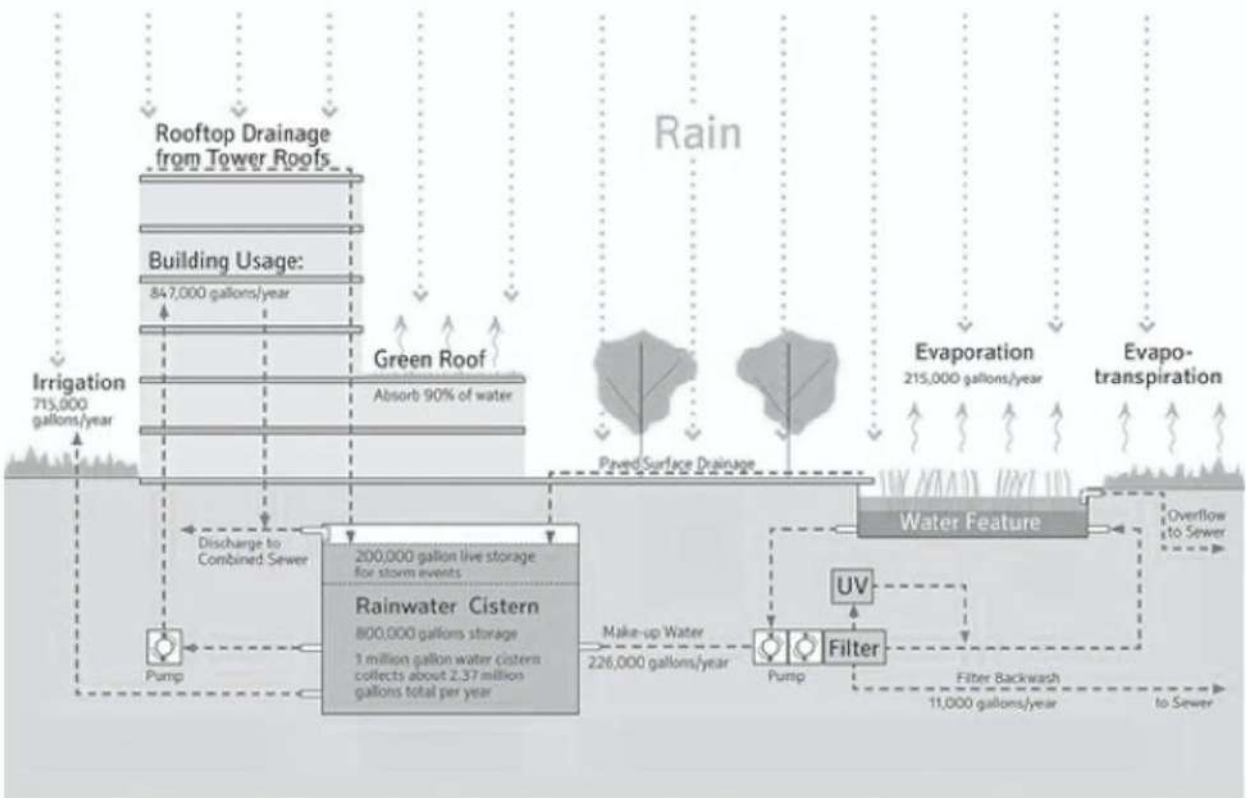
It absorbs heat from the underground and heats up the indoor environment using heat pump.

Use of natural energy sources

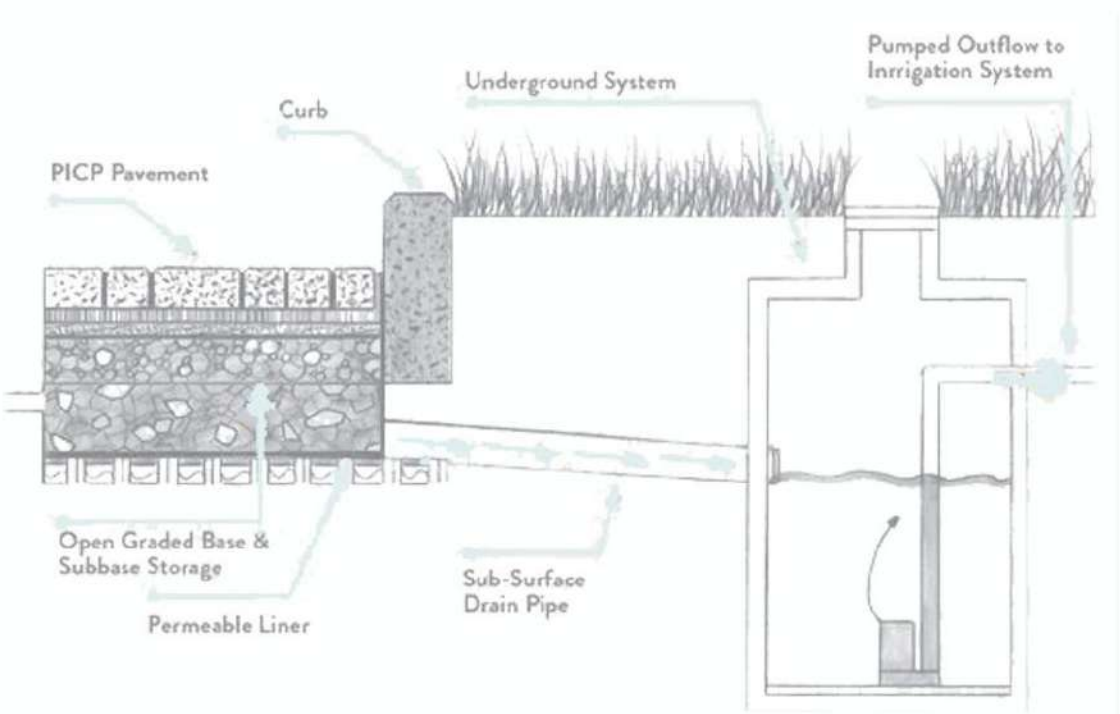


Reuse of rainwater

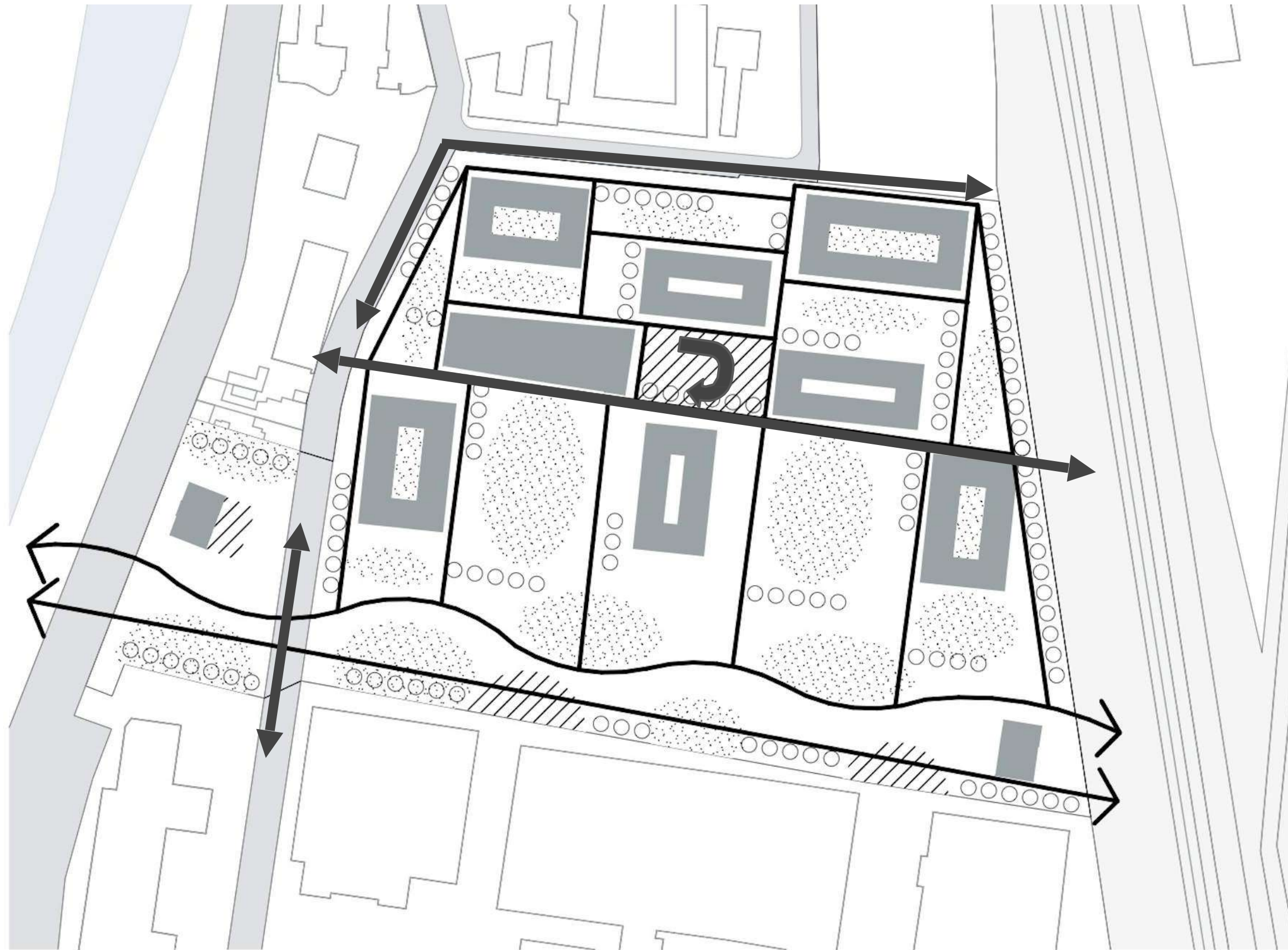
REUSE COLLECTED RAINWATER



WATER HARVESTING USING PICP

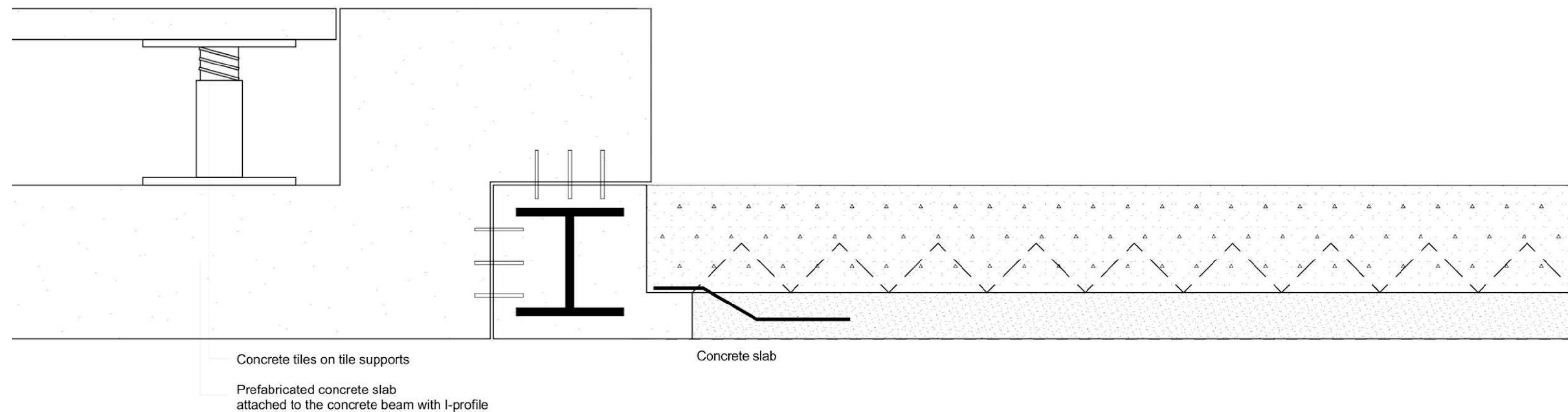


Fire Safety Strategy

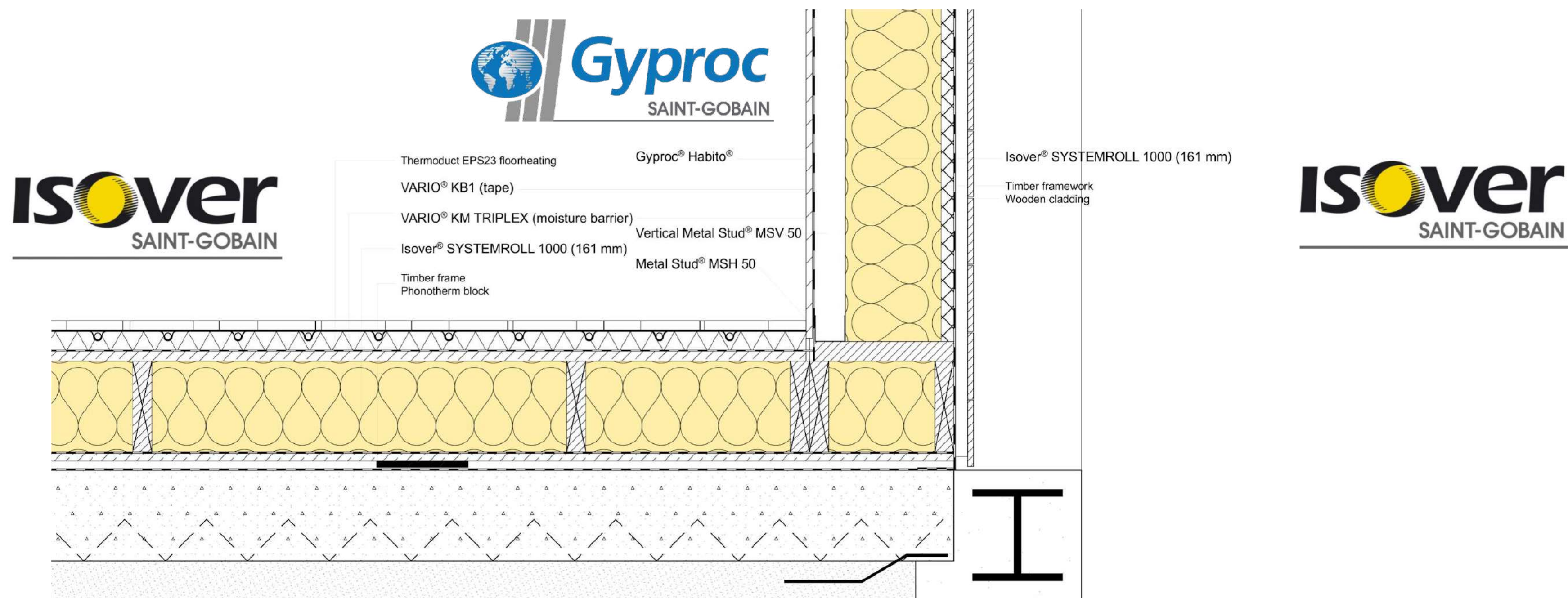


- Main axis = fire truck accessible
 - Linked to 6 buildings
 - Possibility to turn fire truck around on central square
- Other building volumes accessible
- on existing roads
 - Circulation in building situated in outdoor passerelle (immediately fire staircases as well)

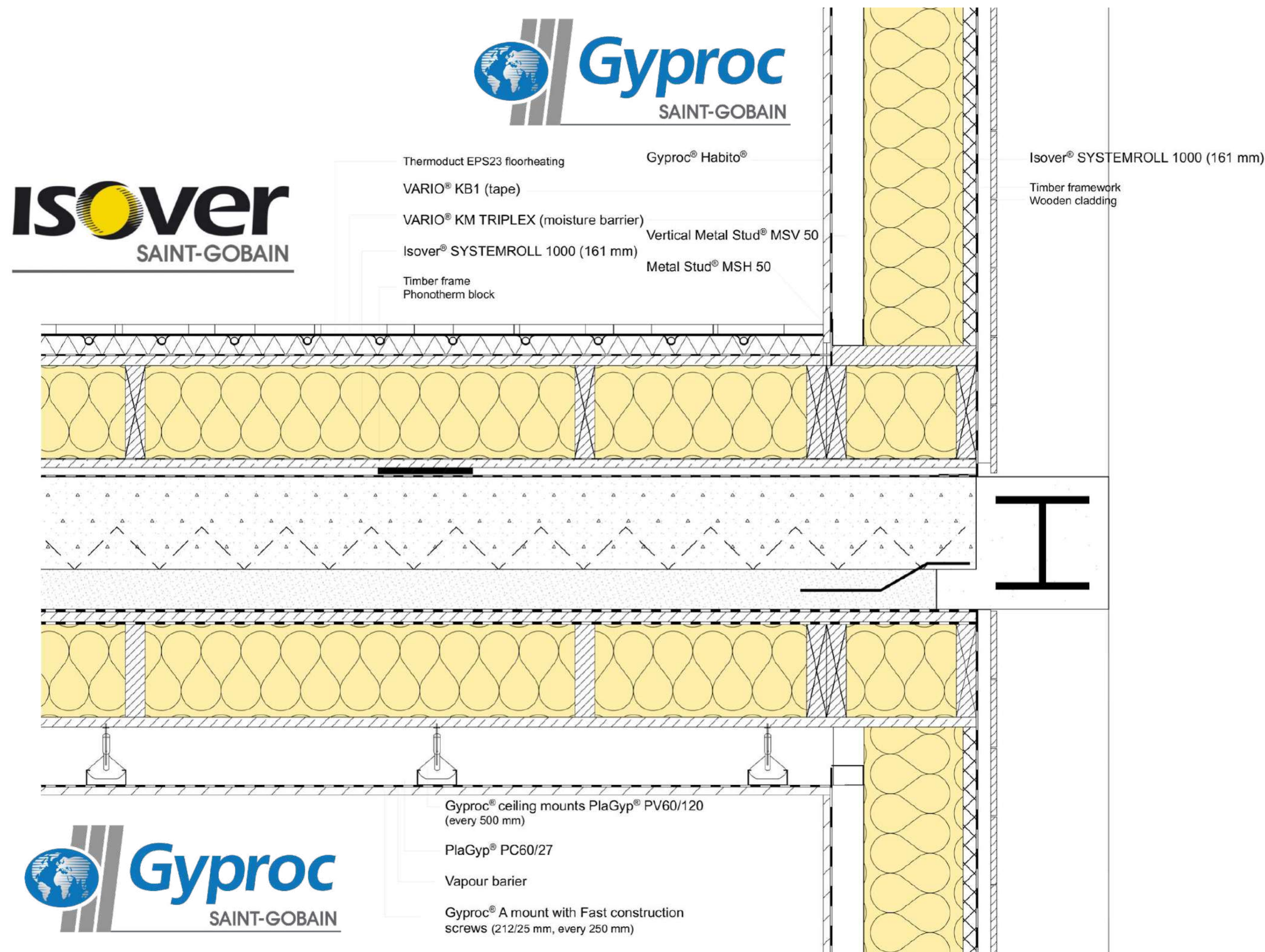
Construction details - slab structural framework and walking bridge



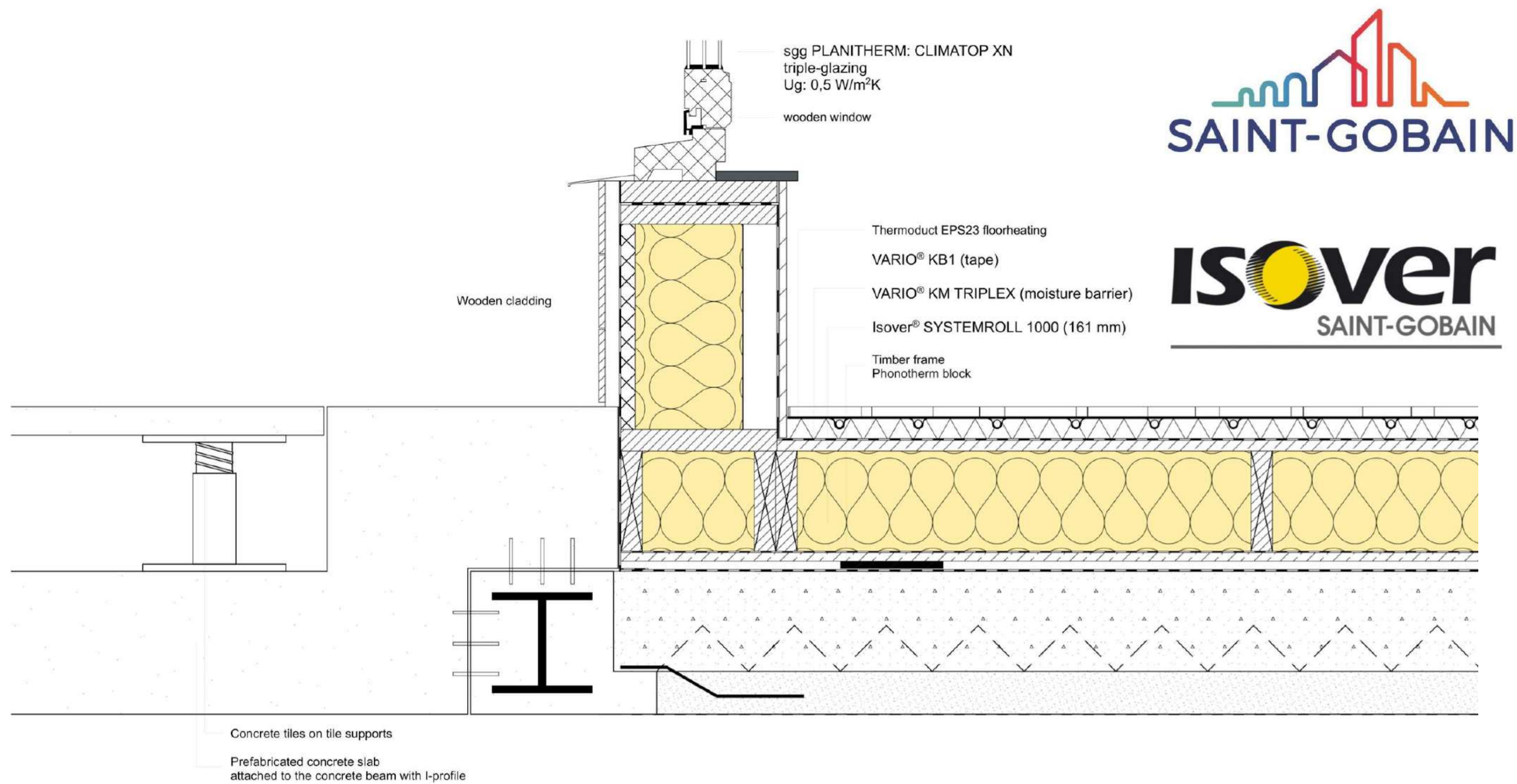
Construction details - connection elevation and slab of prefabricated housing unit



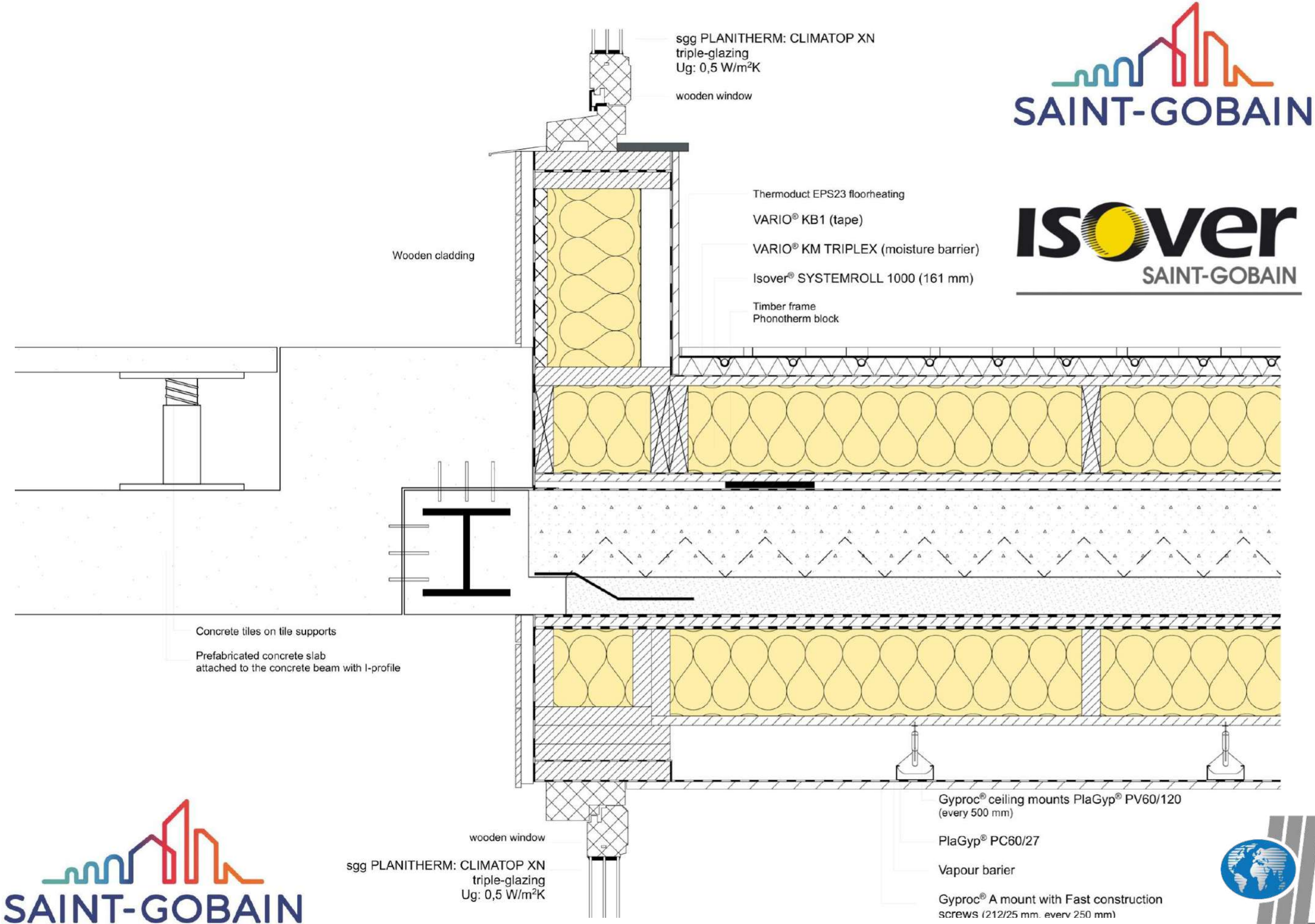
Construction details - elevation detail two units placed above each other



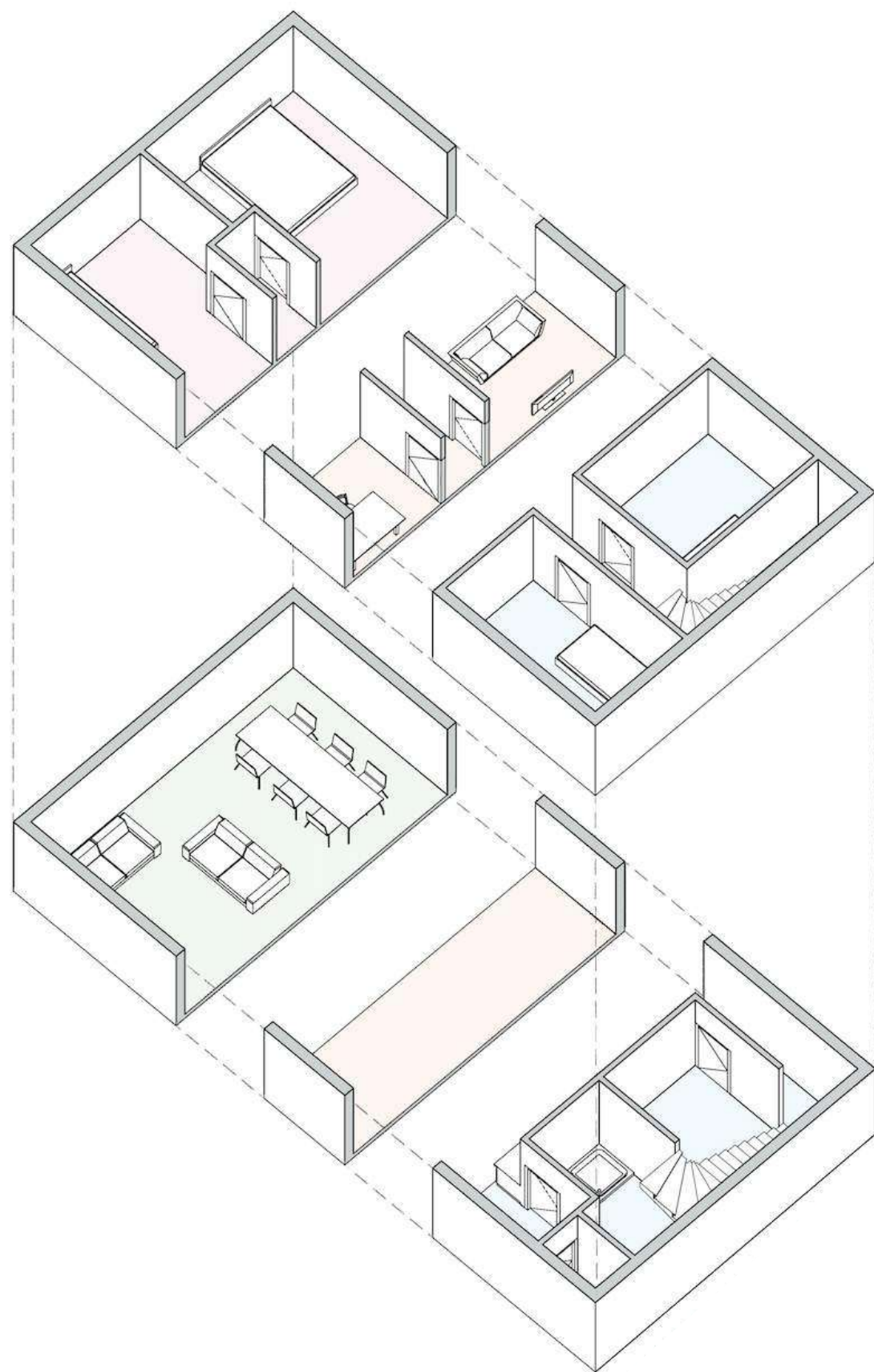
Construction details - connection housing unit to walking bridge



Construction details - connection duplex housing unit to walking bridge



Energy efficiency calculations



Energy simulation flat



EPC value = 20 kWh/m²