ARCHITECTURE STUDENT CONTEST

20th INTERNATIONAL EDITION, Nord-Isère, FRANCE 2025

SAINT-GOBAIN

NATIONAL SCHOOL OF ARCHITECTURE OF TETOUAN

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Morocco

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BALMES SYNERGY

In the **Nord-Isère** context, ‘balmes” has its roots in the pre-Romanic or pre-Indo-European word balma, meaning rock shelter. This origin is strongly associated with natural geographical formations, notably caves or rock shelters, characteristic of the region. In this context, balm evokes a protected place, a space that is both intimate and in direct contact with nature. Our concept is to integrate it, symbolizing a return to the essence of the natural landscape, the idea of shelter and refuge, but also the encounter between man and the earth, a space where light and air circulate through architectural forms in harmony with the environment. This link between balm and local geography makes our project part of a long history of respect and integration with the natural environment.

SAINT-GOBAIN

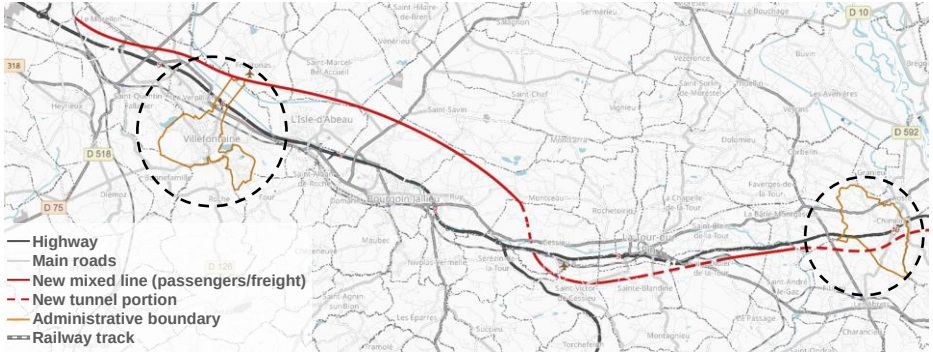
PROJECT TITLE AND BRAINSTORMING

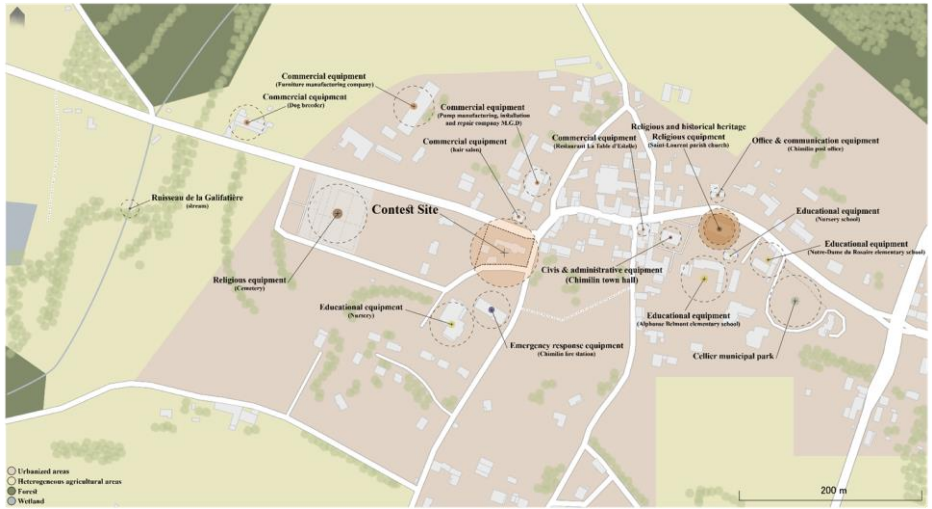
BALMES SYNERGY

SAINT-GOBAIN

SITE ANALYSIS I CHIMILIN

ZONING & EQUIPMENTS OVERVIEW - ENVIRONMENTAL & URBAN LAYERS ANALYSIS





GREENERY & AGRICULTURE FIELDS

TREES

CONSTRUCTION

WETLAND

STREAM OF GALIFATIERE

CONSTRUCTION

GREENERY & AGRICULTURE AREAS

WATER LAYER

VOID

CONSTRUCTION

URBAN LAYER

DEPARTMENTAL ROAD

CONSTRUCTION

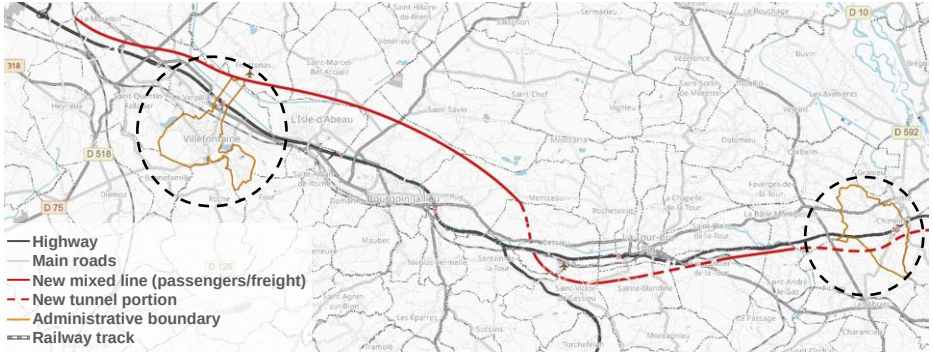
COMMUNAL ROAD

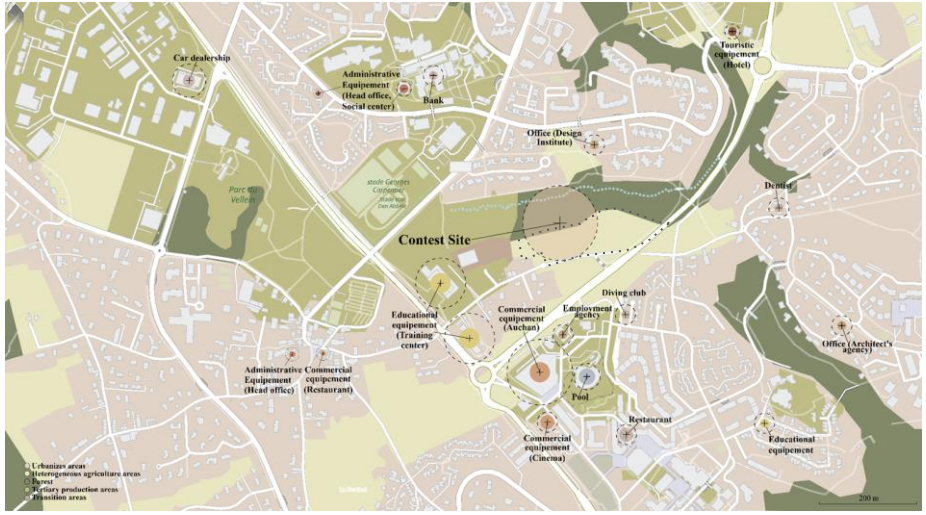
RESTRICTED ACCESS TO AUTHORIZED PERSONS

UNFRASTRUCTURE

SITE ANALYSIS I VILLEFONTAINE

ZONING & EQUIPMENTS OVERVIEW - ENVIRONMENTAL & URBAN LAYERS ANALYSIS



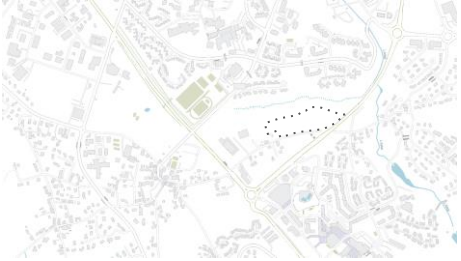


GREENERY & AGRICULTURE FIELDS

TREES

CONSTRUCTION

GREENERY & AGRICULTURE AREAS



WETLAND

STREAM OF L'AILLAT

CONSTRUCTION

WATER LAYER

VOID

SPORT FIELDS

CONSTRUCTION

URBAN LAYER

DEPARTMENTAL ROAD

CONSTRUCTION

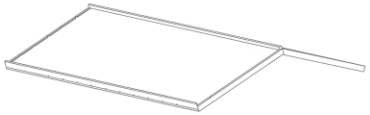
COMMUNAL ROAD

RESTRICTED ACCESS TO AUTHORIZED PERSONS

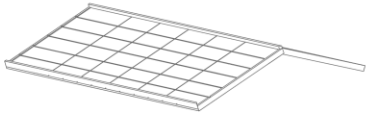
UNFRASTRUCTURE

STRATEGY I CONCEPT

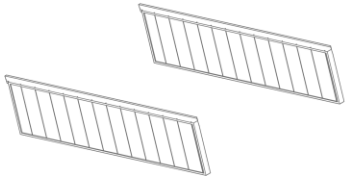
THE BALMES SYNERGY : Where innovation and heritage coexist



A sloping glass roof ECLAZ ZEN glass
With a solar factor of 0.38 effectively blocks around two-thirds of the sun's heat, minimizing cooling loads and contributing to energy efficiency.
Thermal Insulation : The glass boasts a low U-value of 1.0 W/(m-²K), which enhances thermal insulation and aids in reducing heating costs during colder periods.



Photovoltaic sunshades with adjustable louvers
Optimize natural lighting and thermal comfort by adjusting solar gain from 0 to °180, thus reducing energy consumption. They limit the need for air conditioning in summer and maximize solar gain in winter, while producing renewable electricity. This intelligent system improves the building's energy efficiency and helps it to obtain ecological certifications. Made from recyclable materials, it helps reduce the carbon footprint and is part of a sustainable construction approach.



Inclined curtain wall made of tilt-and-turn glass combined with ECLAZ ZEN glass
It maximizes the building's energy efficiency. The glass blocks excessive heat, reducing overheating by %56 during the hottest months. It also lets you enjoy the view outside by limiting the use of blackouts, and reduces energy consumption.
Thanks to its ability to modulate light entry and adjust interior temperature, the system optimizes thermal comfort and reduces carbon footprint. This approach combines sustainability and energy performance while promoting a pleasant, sustainable indoor environment.

STRATEGY I CHIMILIN

A NEW CHAPTER FOR THE FORMER SCHOOL : From an Old School to a multifunctional building

RENOVATED PART (AREA A)

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RENOVATED PART (AREA A)

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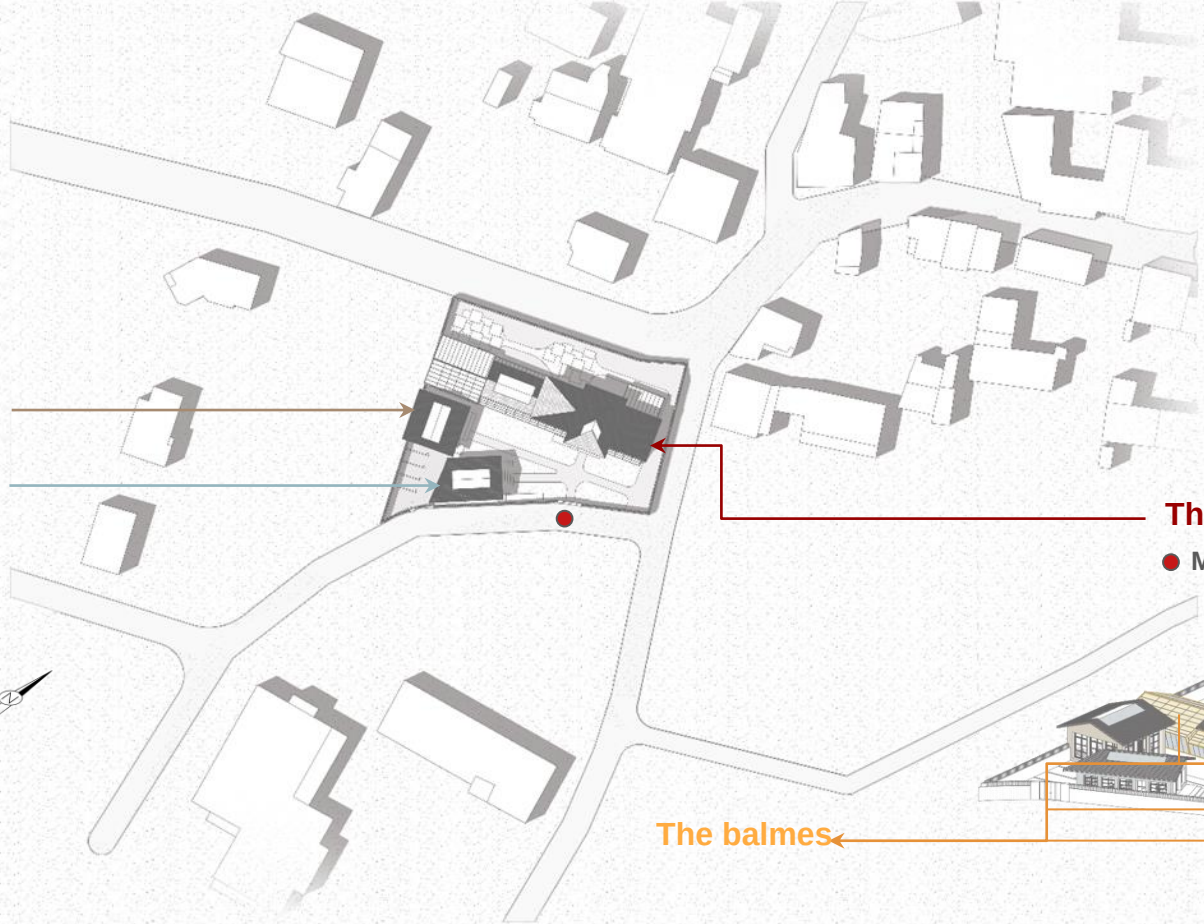
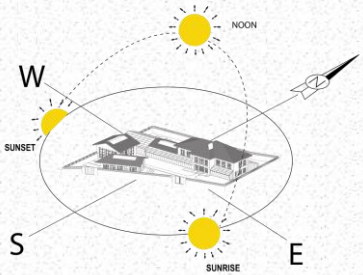
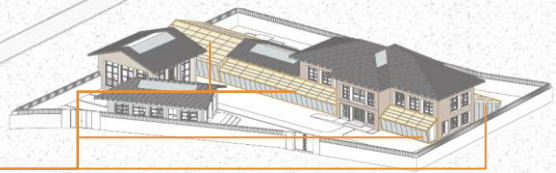
MASTERPLAN







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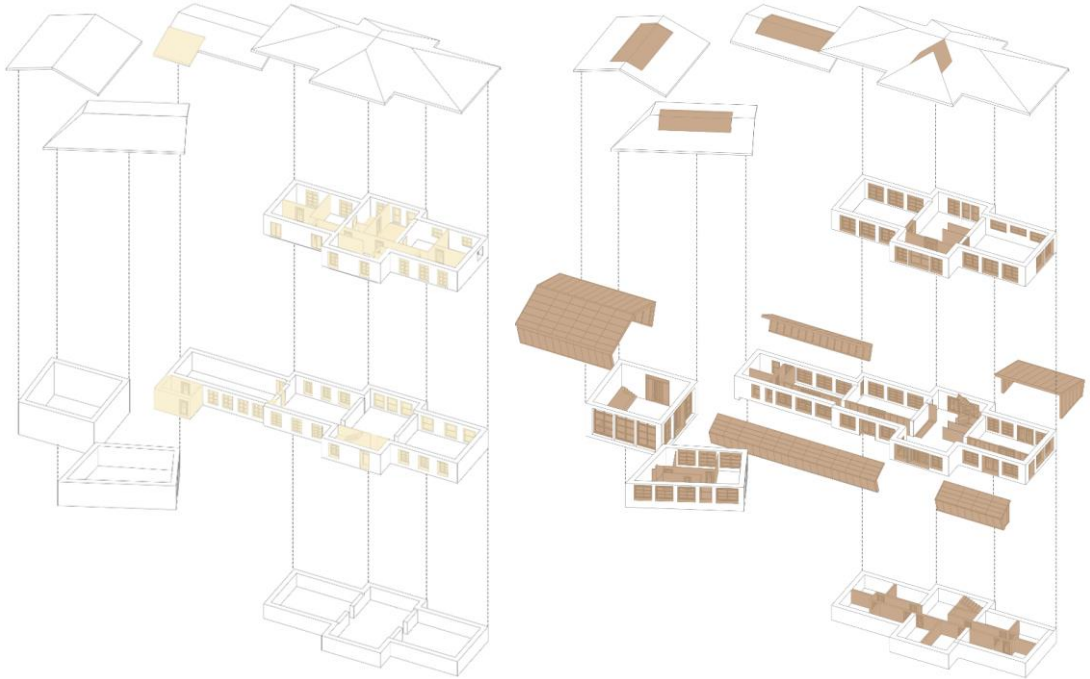
DEMOLITION AND NEW CONSTRUCTION

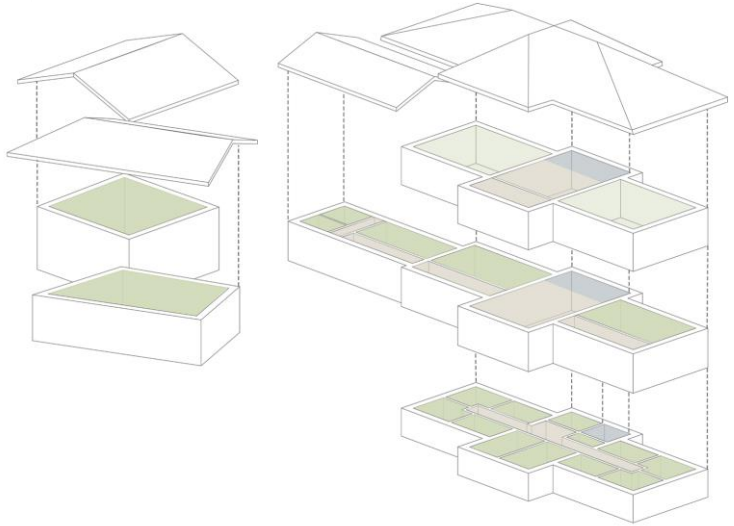


TO BE DEMOLISHED
We removed only parts that didn't fit the new program, preserving the original architecture and ensuring sustainability.

EXISTING
The rehabilitation was carefully planned to preserve all structural elements and distinctive architectural features.

NEW
The building was upgraded with better comfort, energy efficiency, a new event space, and a sustainable façade that respects its original look.

CIRCULATION AND SPACE TYPOLOGY DIAGRAM



HORIZONTAL CIRCULATION

VERTICAL CIRCULATION

LIVELY SPACES

QUIET SPACES

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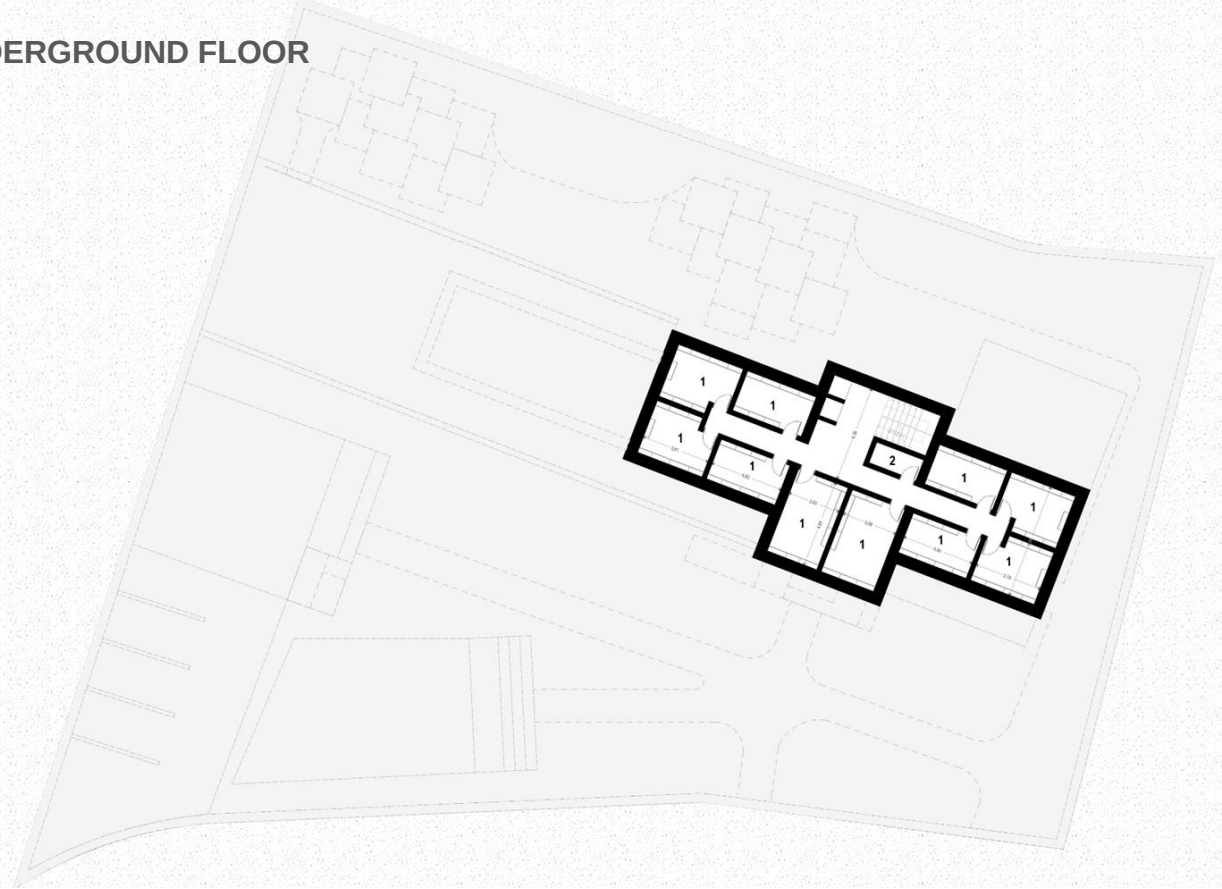
UNDERGROUND FLOOR



In the basement plan, the spaces have been designed to have storage rooms for all Chimilin's associations and businesses, so that everything can be integrated and anchored in the renovated project program.

The breakdown is as follows : 2 businesses per room and 2 associations per room.

1- Storage
2- Recycling area

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A NEW CHAPTER FOR THE FORMER SCHOOL : From an Old School to a multifunctional building

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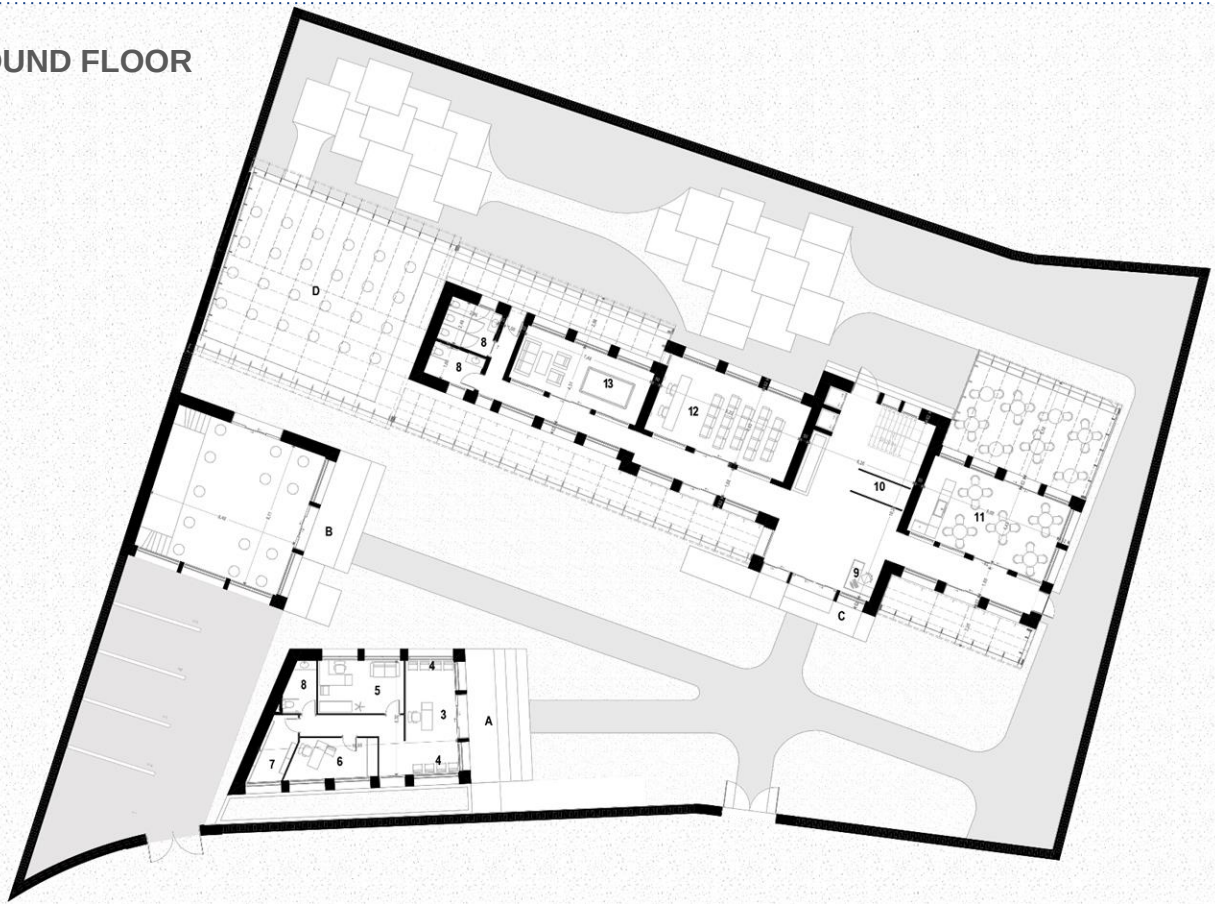
GROUND FLOOR



A- Administrative area

3- Reception
4- Waiting area
5- Office manager
6- Office
7- Archive room
8- Sanitary

B- Event Hall

C- The renovated building

9- Reception
10- Exhibition area
11- Cafeteria
12- Multipurpose room (Conferences, meetings, workshops…)
13- Playroom
8- Sanitary

D- Party hall

STRATEGY I CHIMILIN

A NEW CHAPTER FOR THE FORMER SCHOOL : From an Old School to a multifunctional building

N

GROUND FLOOR
FIRE SAFETY
EMERGENCY EXIT
STRATEGY

A- Administrative area

3- Reception
4- Waiting area
5- Office manager
6- Office
7- Archive room
8- Sanitary

B- Event Hall

C- The renovated building
9- Reception
10- Exhibition area
11- Cafeteria
12- Multipurpose room (Conferences, meetings, workshops…)
13- Playroom
8- Sanitary

D- Party hall

- - ➤ Emergency exit

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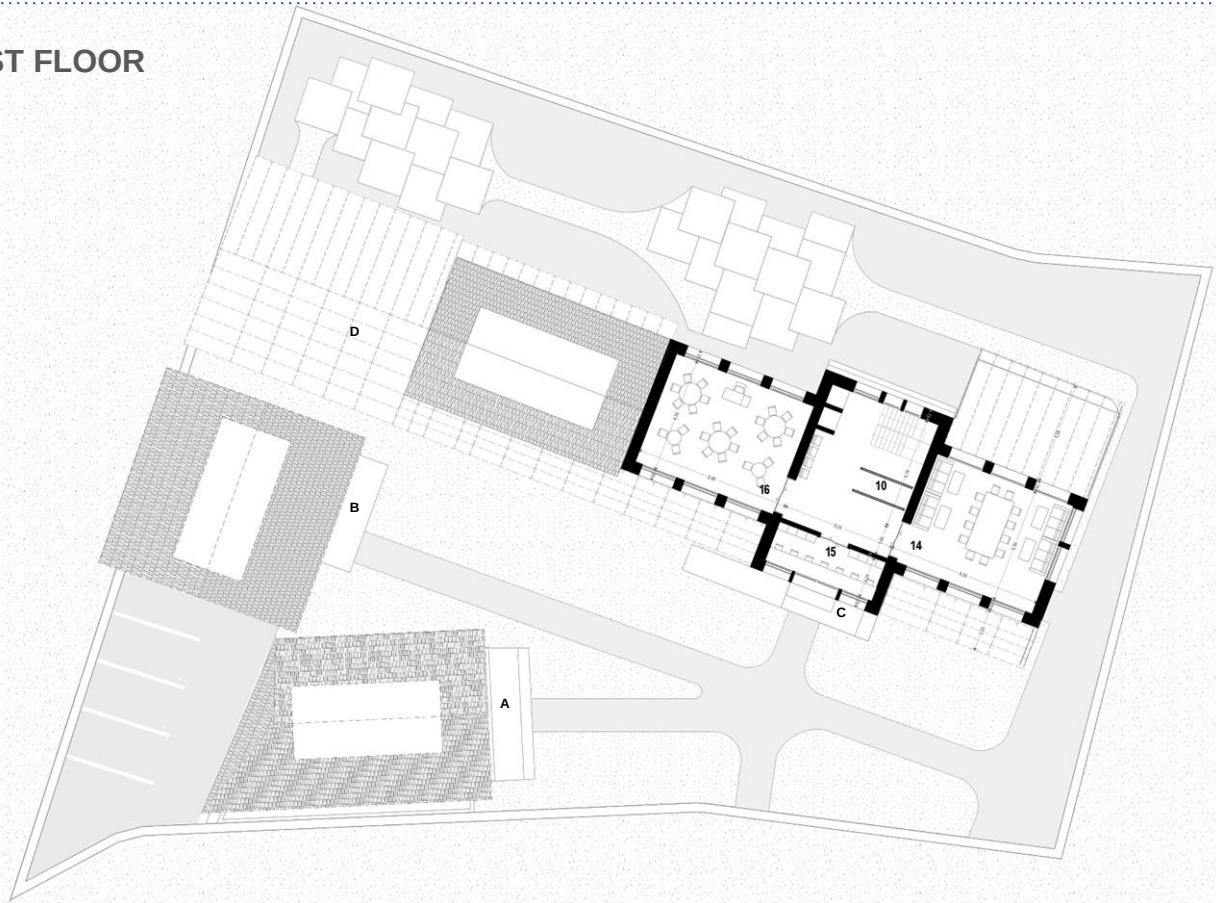
FIRST FLOOR



A- Administrative area

B- Event hall

C- The renovated building

10- Exhibition area
14- Meeting room
15- Library
16- Shared cultural workspace (Modular layout for associations)

D- Party hall

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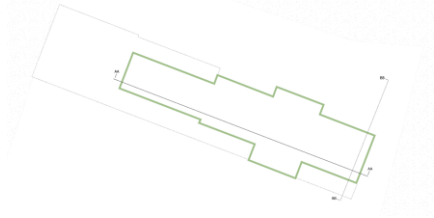
SECTIONS



Section AA

Section BB

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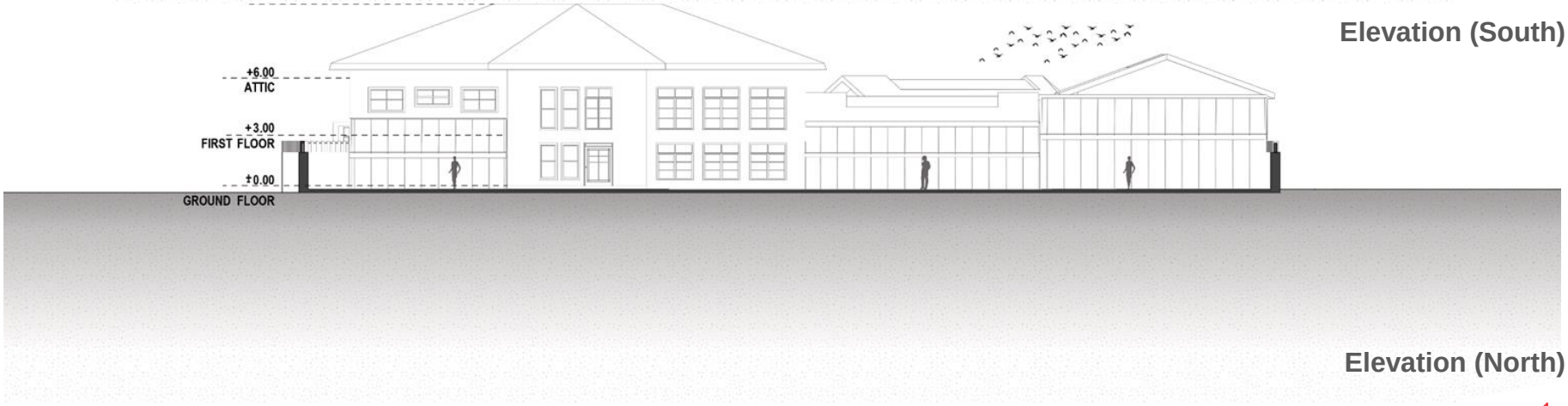
ELEVATIONS

Elevation (South)



Elevation (North)

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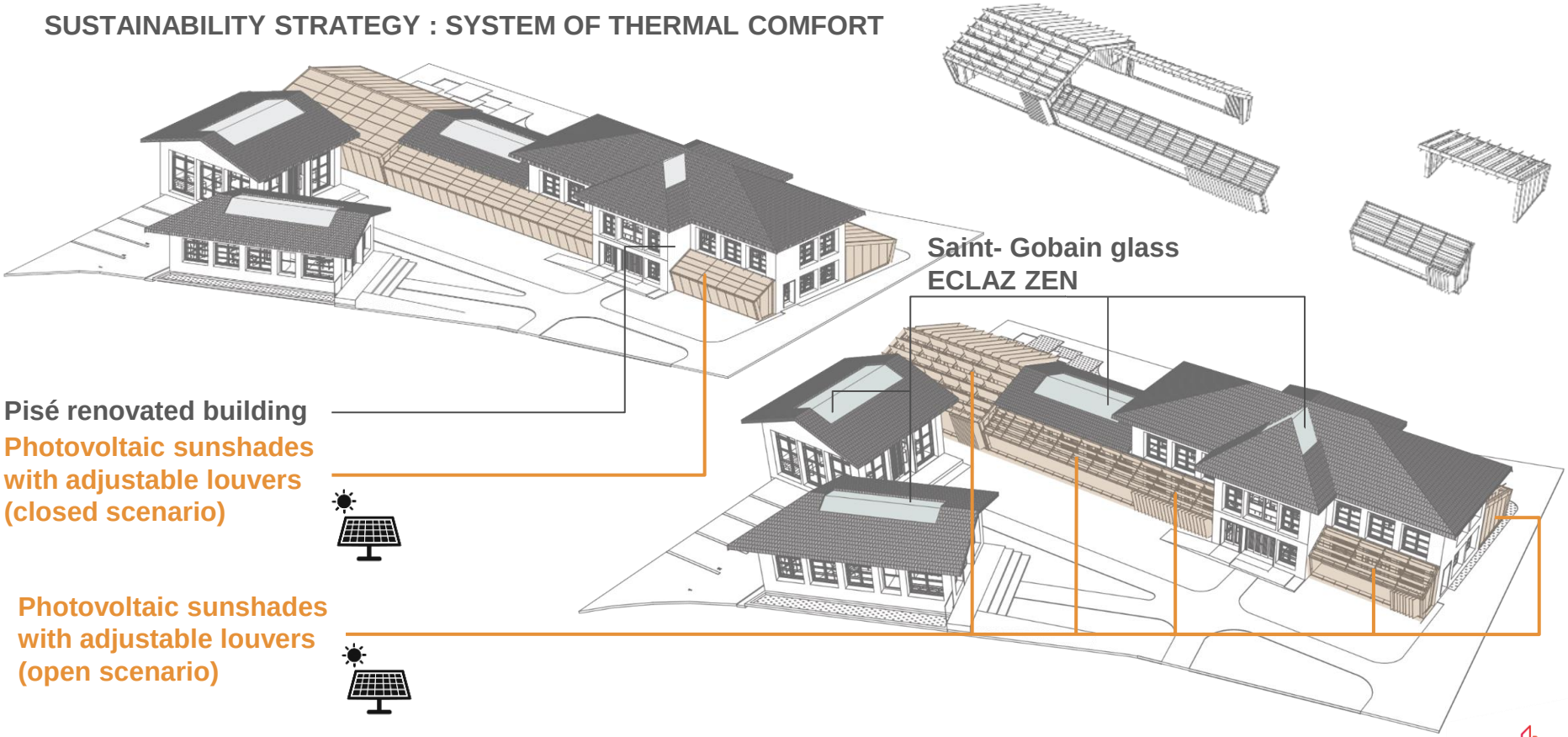
SUSTAINABILITY STRATEGY : SYSTEM OF THERMAL COMFORT



STRATEGY I CHIMILIN

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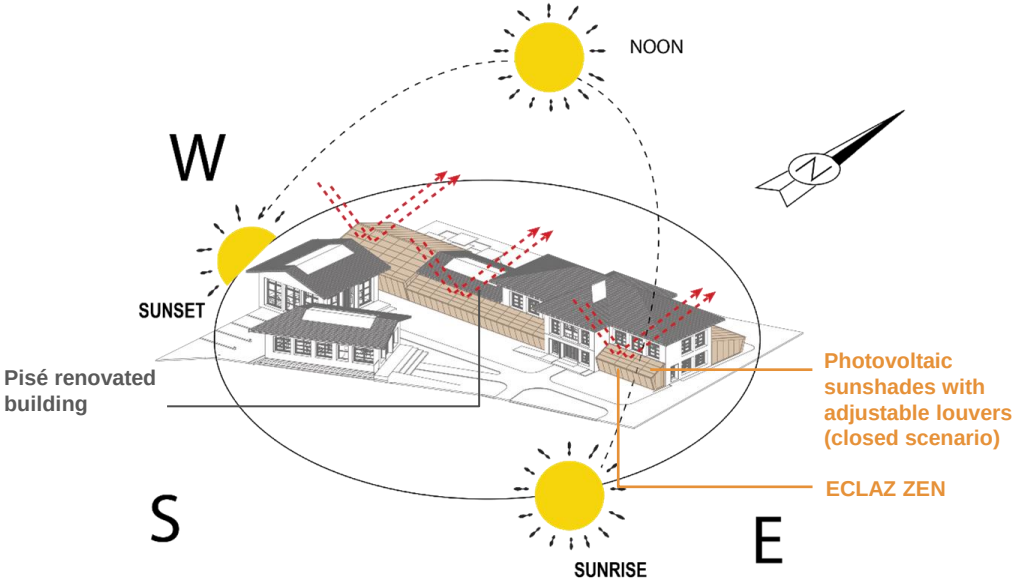
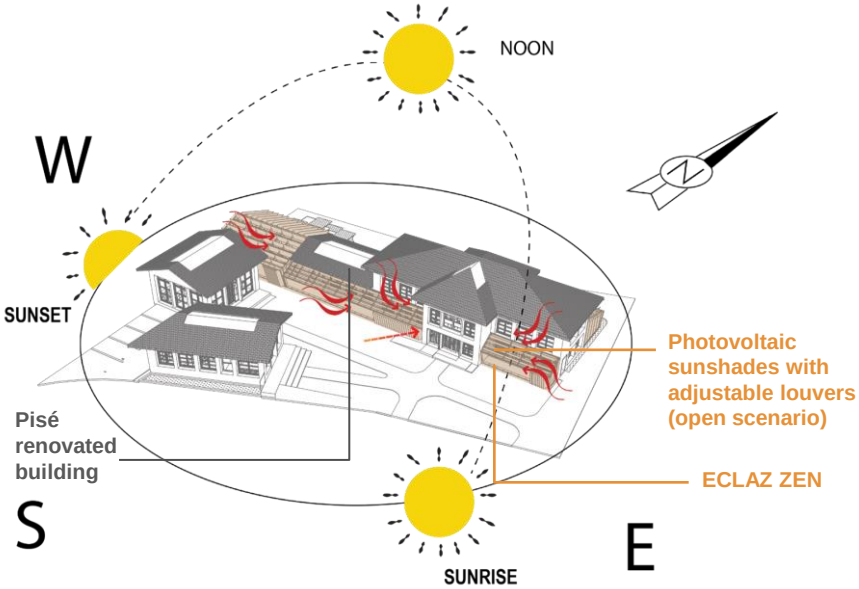
SUSTAINABILITY STRATEGY : THERMAL COMFORT



In their closed scenario, they block the penetration of the sun's heat into the building, because they can be adjusted from 0 to 180 degrees, providing comfort to suit individual needs. So, in terms of sustainability, photovoltaic panels absorb the heat they reflect and convert it into renewable energy for later use, reducing dependence on fossil fuels and minimizing CO_2 emissions.

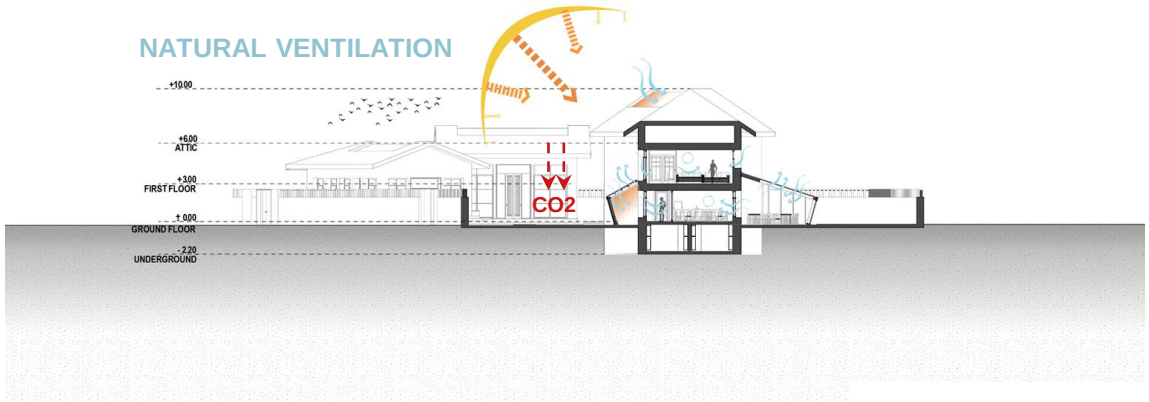


In their open scenario, they allow total penetration of the sun's heat into the building, through the link of openings, which provides energy storage in the pisé walls and thus in the building, creating optimized comfort.

STRATEGY I CHIMILIN

A NEW CHAPTER FOR THE FORMER SCHOOL : From an Old School to a multifunctional building

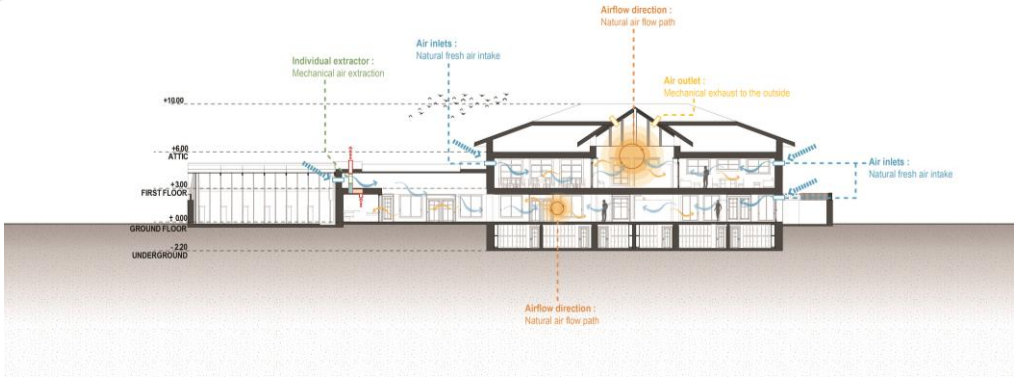
SUSTAINABILITY STRATEGY : INDOOR AIR QUALITY



MECHANICAL VENTILATION

DECENTRALIZED MECHANICAL VENTILATION

The VMR system improves indoor air quality by combining natural and mechanical ventilation, ensuring fresh air intake and efficient removal of stale air. It reduces energy consumption, supports sustainability by minimizing heating and cooling needs, and promotes long-term environmental efficiency.



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SUSTAINABILITY STRATEGY : NATURAL DAYLIGHT

Winter solstice

Light Transmittance (TL) = 80%
Thermal transmission coefficient (Ug) = 1.0
Solar factor (g) = 0,53

ECLAZ® ZEN

Summer solstice

SAINT-GOBAIN

STRATEGY I CHIMILIN

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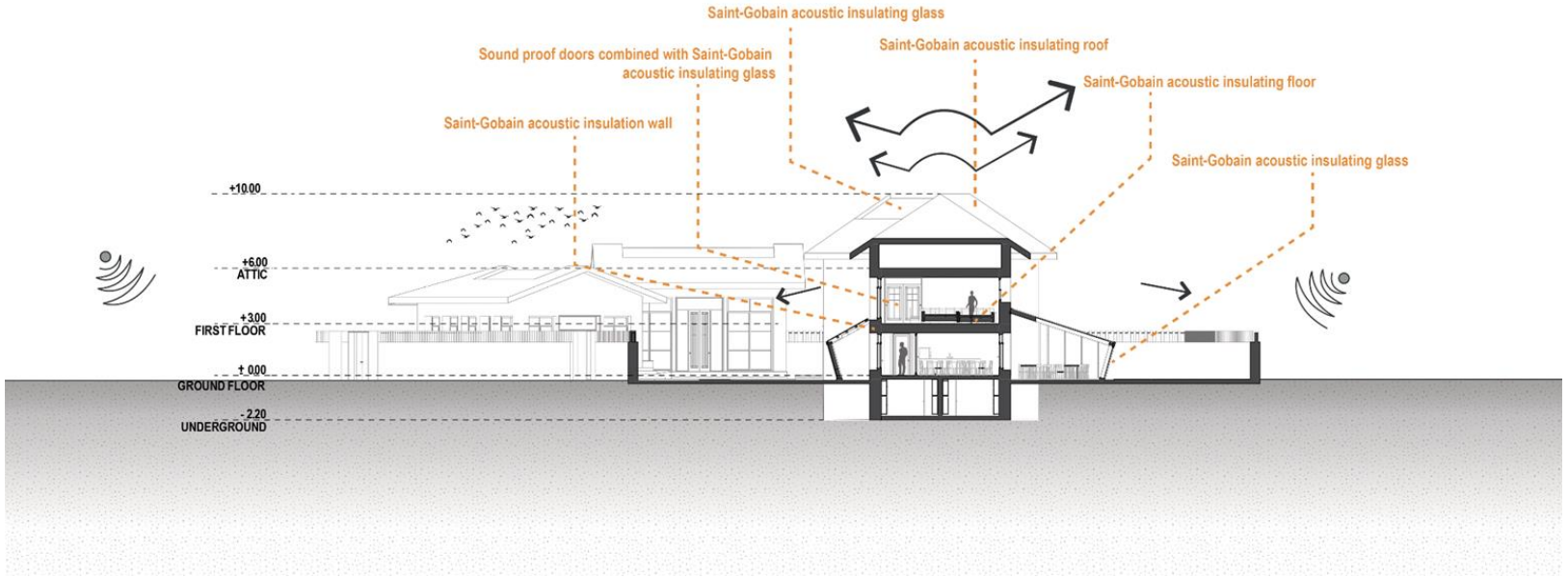
SUSTAINABILITY STRATEGY : ACOUSTIC COMFORT



To reduce acoustic disturbances from external traffic noise, impact sounds like footsteps and moving furniture, as well as airborne noise, we use slabs specifically designed for high acoustic performance.

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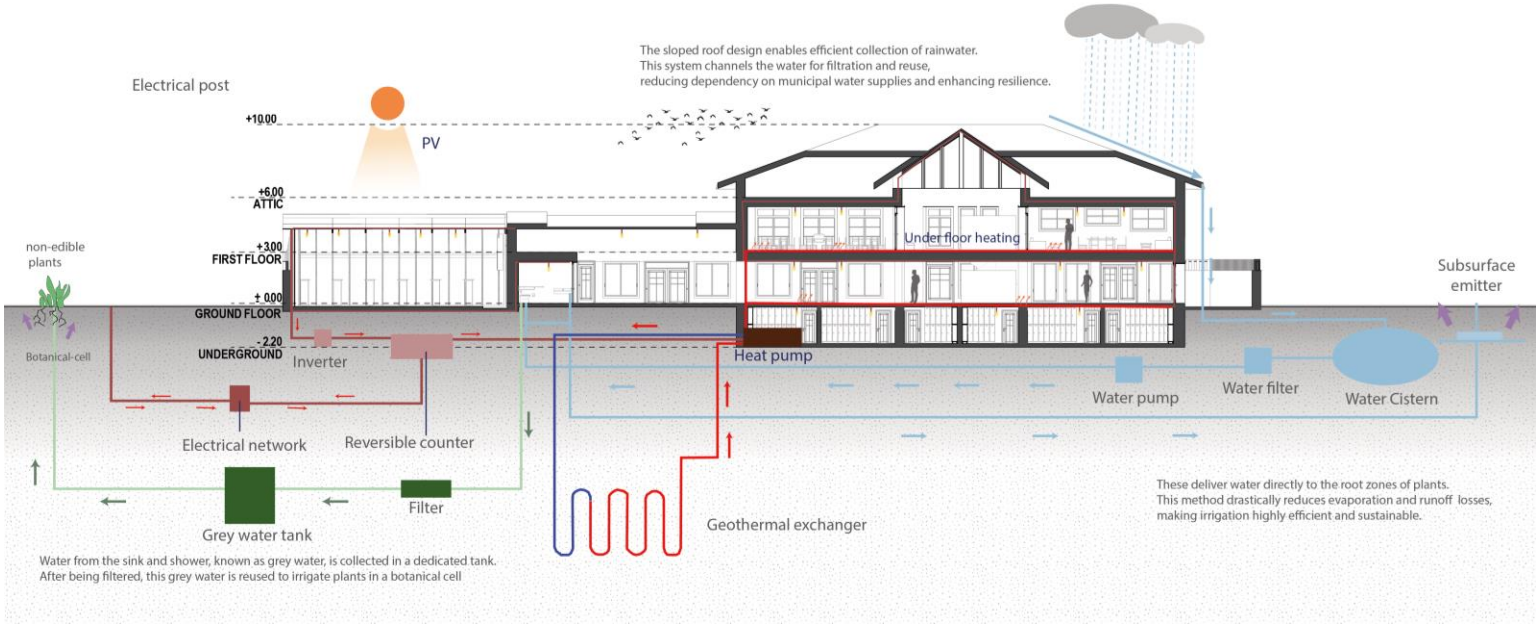
SUSTAINABILITY STRATEGY : RAINWATER HARVESTING & GEOTHERMAL HEATING/COOLING



STRATEGY I CHIMILIN

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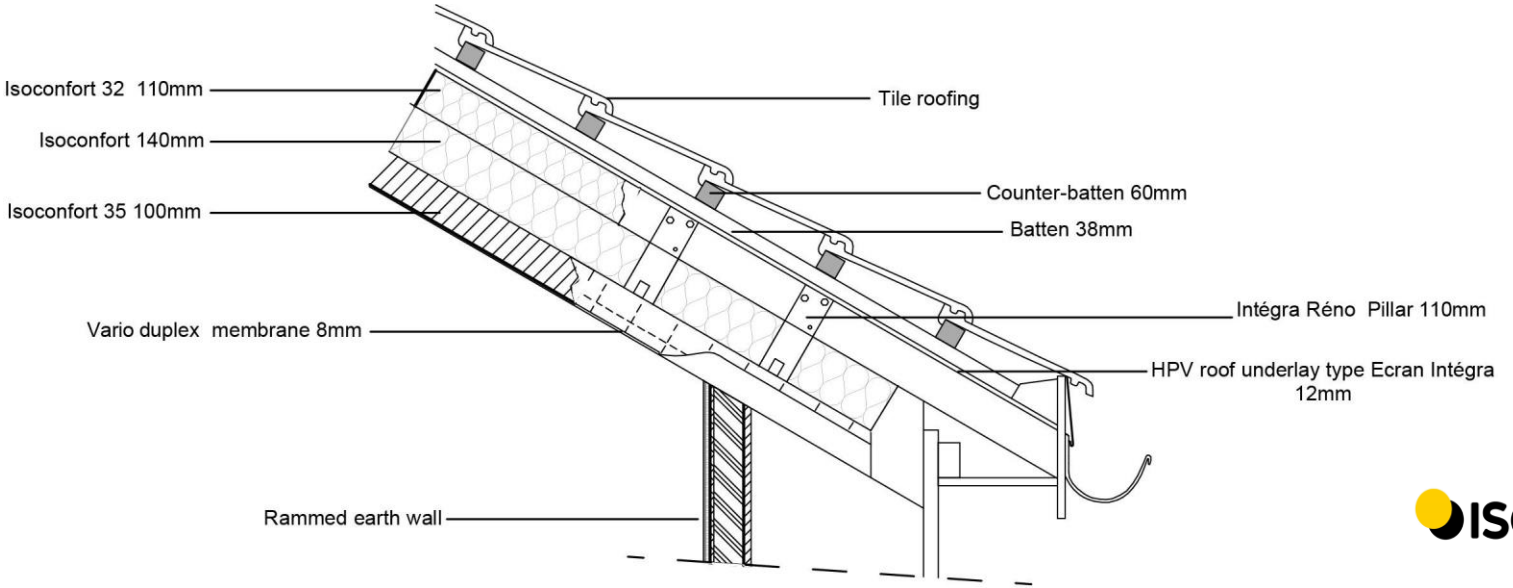
TECHNICAL DETAILS



isover SAINT-GOBAIN

ROOF

Thickness = 500mm

REI 60

U = 0.070 W/m²·K
$D_{nT,w}$ = 54 dB
$L_{nT,w'}$ = 55 dB

STRATEGY I CHIMILIN

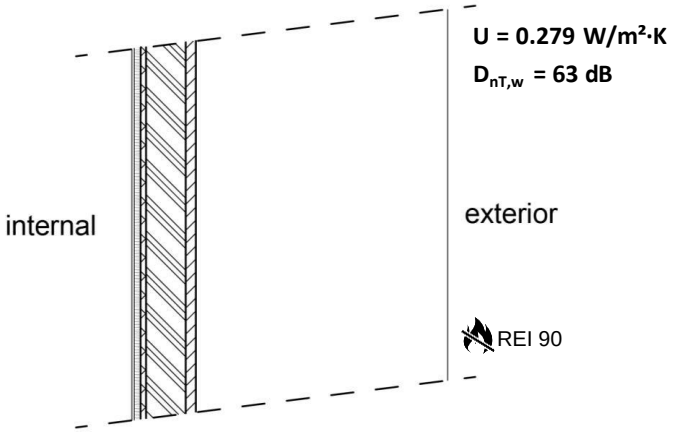
A NEW CHAPTER FOR THE FORMER SCHOOL : From an Old School to a multifunctional building

TECHNICAL DETAILS

External wall

Thickness=620mm

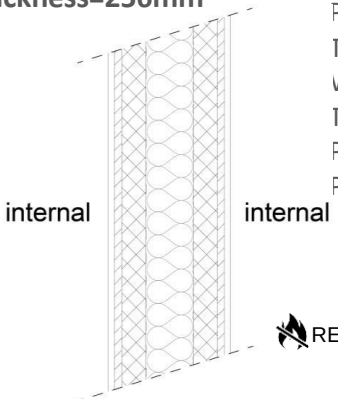
Rammed earth wall 500mm
Batten system(Optima) 20mm
ISOVER GR32 Mineral Wool(Rockwool/Glasswool) 80mm
Placo® Optima System (Metal Studs & Rails) 10mm
Placo® Placoflam 15 (Fire-Resistant Plasterboard) 12.5mm
Weber Therm XM Natural Lime-Based Render 5mm



U = 0.279 W/m²·K
$D_{nT,w}$ = 63 dB

Internal wall

Thickness=256mm



Placo® Placoplatre BA 13 13mm
Placo® Phonique or Fireboard 15mm
Timber Frame (C18 class) 50mm ISOVER GR 32 (Glass Wool) 100mm
Timber Frame (C18 class) 50mm
Placo® Phonique or Fireboard 15mm Placo® Placoplatre BA 13 13mm

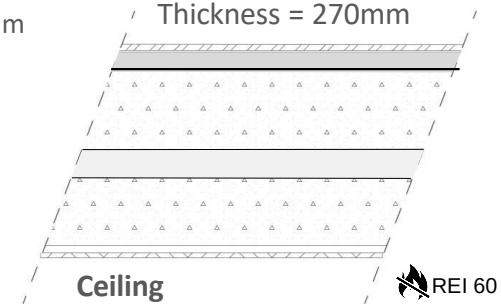
U = 0.231 W/m²·K
$D_{nT,w}$ = 65dB

Terracotta tile (Point.P) 15mm
Weber.xerm 860 5mm
Isover Multimax 50mm
Terracotta slab 200m

U = 0.26 W/m²·K
$D_{nT,w}$ = 62dB
$L_{nT,w}$ = 52dB

Terracotta slab 200m
Isover GR 32 80mm
Placo® Phonique 12.5mm
PROGYP PPF BA 12.5mm

Floor REI 90
Thickness = 270mm



Ceiling REI 60
Thickness = 305mm

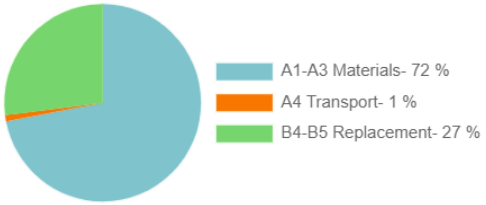
STRATEGY I CHIMILIN

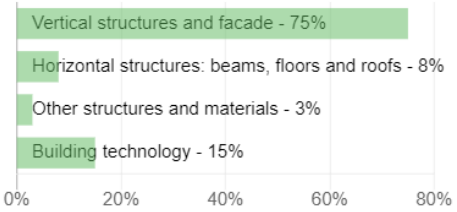
A NEW CHAPTER FOR THE FORMER SCHOOL : From an Old School to a multifunctional building

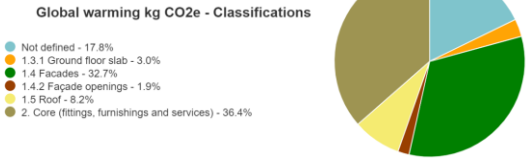
LIFE CYCLE ANALYSIS

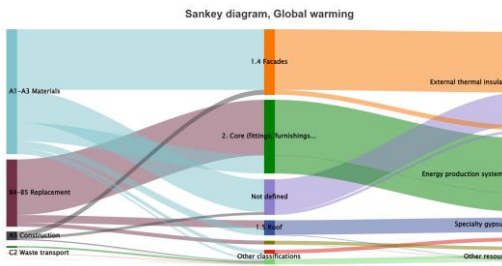
Cradle to grave (A1-A4, B4-B5, C1-C4)	kg CO_2e/m^2
(< 350) A (350-530) B (530-710) C (710-890) D (890-1070) E (1070-1250) F (> 1250) G	232

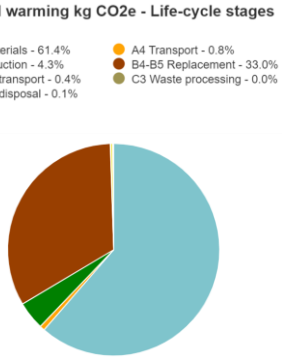
One Click LCA

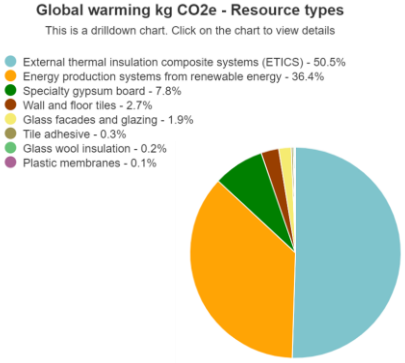


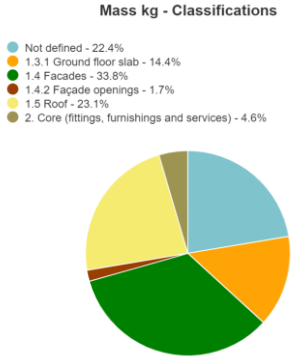


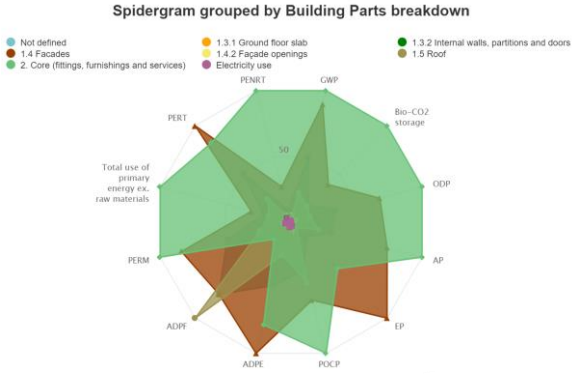












SAINT-GOBAIN

STRATEGY I CHIMILIN

A NEW CHAPTER FOR THE FORMER SCHOOL : From an Old School to a multifunctional building

LIFE CYCLE ANALYSIS

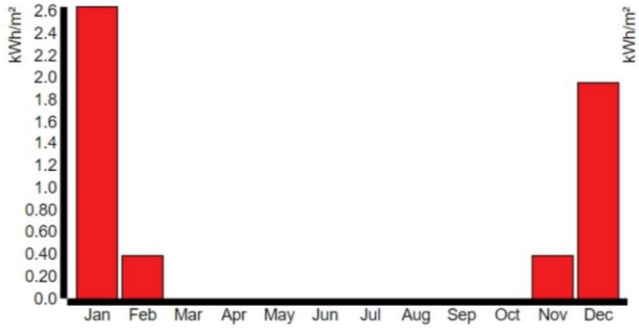
Indicator	Building [kWh/m²]	Limit value [kWh/m²]	Comply
Heating needs	5,3	25,0	Yes
Cooling needs	0,0	25,0	Yes

Lighting autonomy 300 Lux	Autonomy [%]	Required [%]	Comply
TZ: SPACE 1 DAYLIGHTINGCONTROLS	79,8	60.0 %	Yes
TZ: SPACE 2 DAYLIGHTINGCONTROLS	69,2	60.0 %	Yes
TZ: SPACE 3 DAYLIGHTINGCONTROLS	80,9	60.0 %	Yes

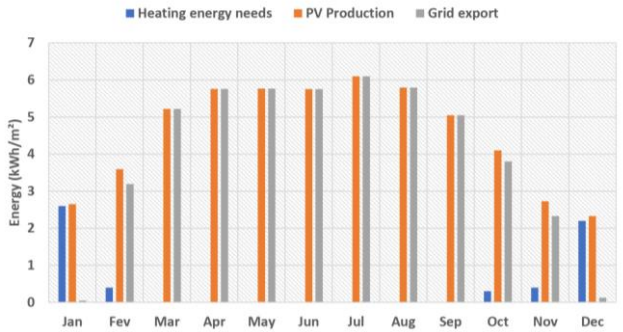
Summer comfort (overheating % of season)	Overheating [%]	Required [%]	target [%]	Comply
TZ: SPACE 1	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 2	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 3	0,0	10.0 %	5.0 %	Yes

Simulation by SG SaveI plugin for SketchUp

Heating needs



Simulation by SG SaveI plugin for SketchUp



Simulation by PVGis

The renovated project, as a positive energy building with low heating needs, high daylight autonomy, optimal thermal comfort, and strong PV production, is well-positioned to be part of an energy community where its surplus energy can be shared locally, fostering a sustainable and resilient energy network.

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

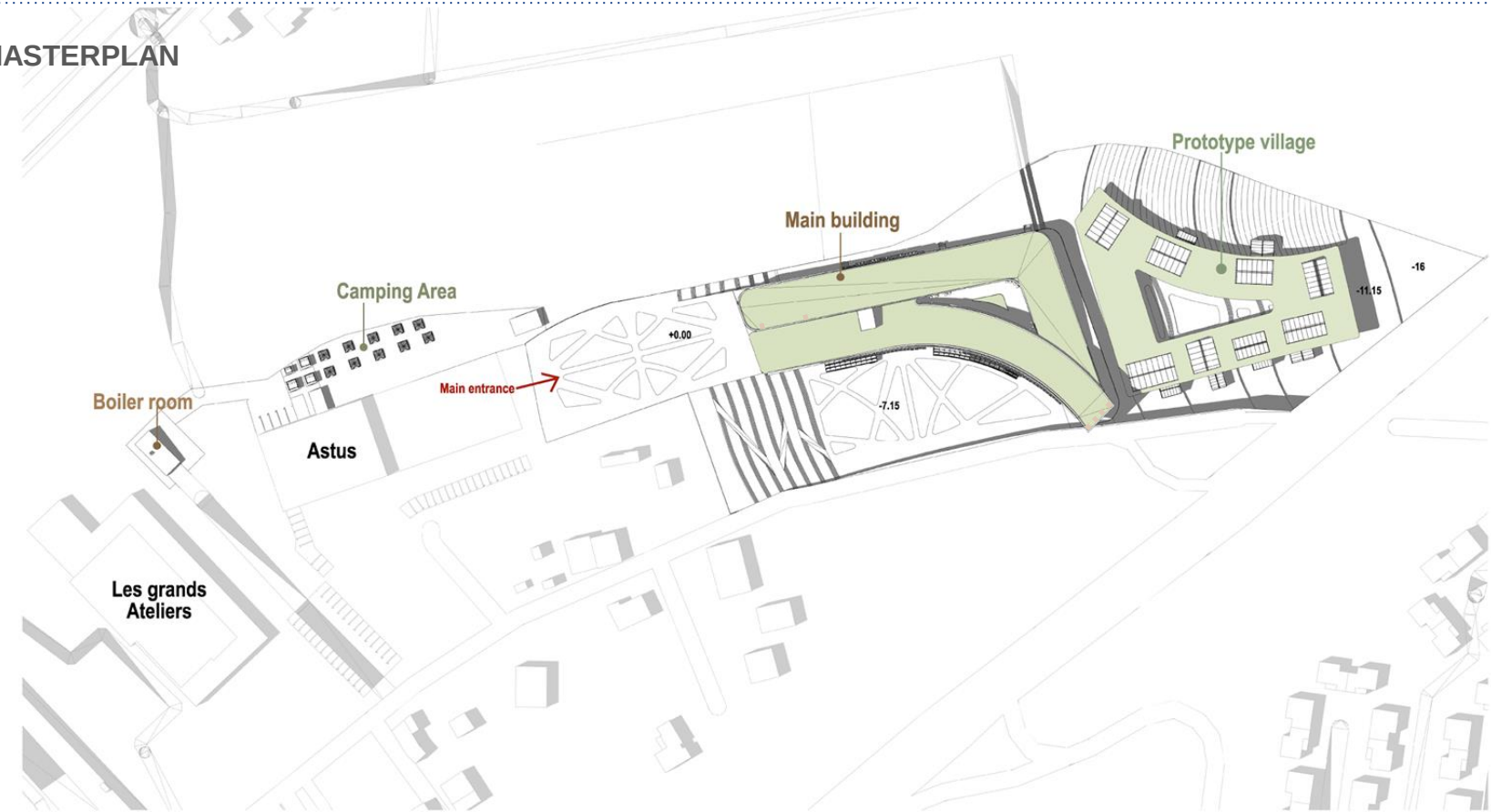
NEWLY BUILT PART (AREA B)

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

N

MASTERPLAN



SAINT-GOBAIN

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

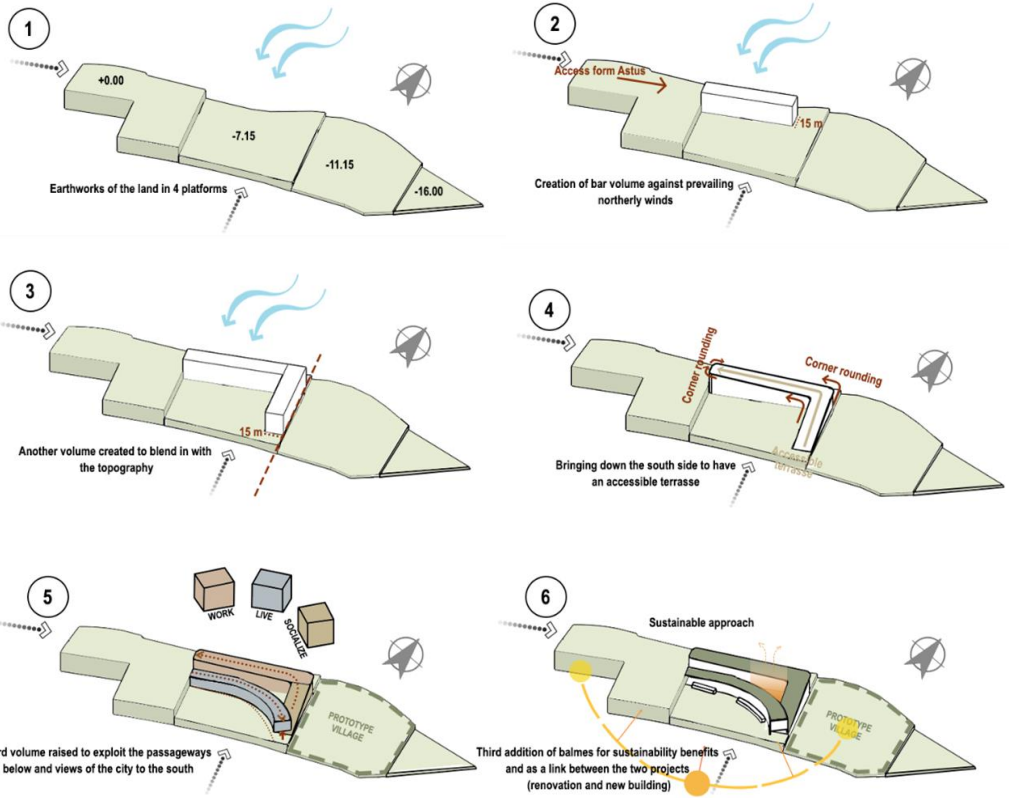
NEWLY-BUILT PART (AREA B)

SAINT-GOBAIN

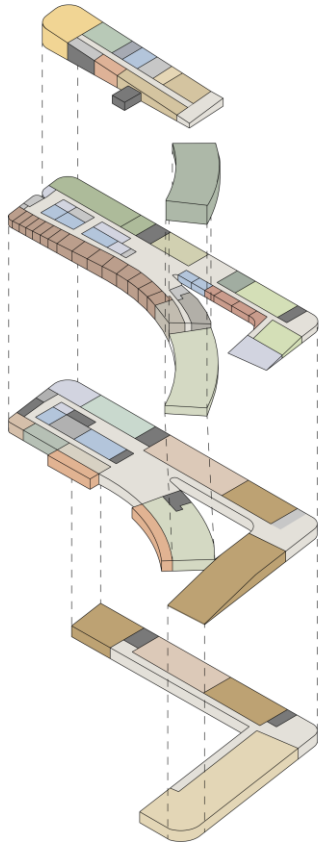
STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

CONCEPT



FUNCTIONAL DIAGRAM



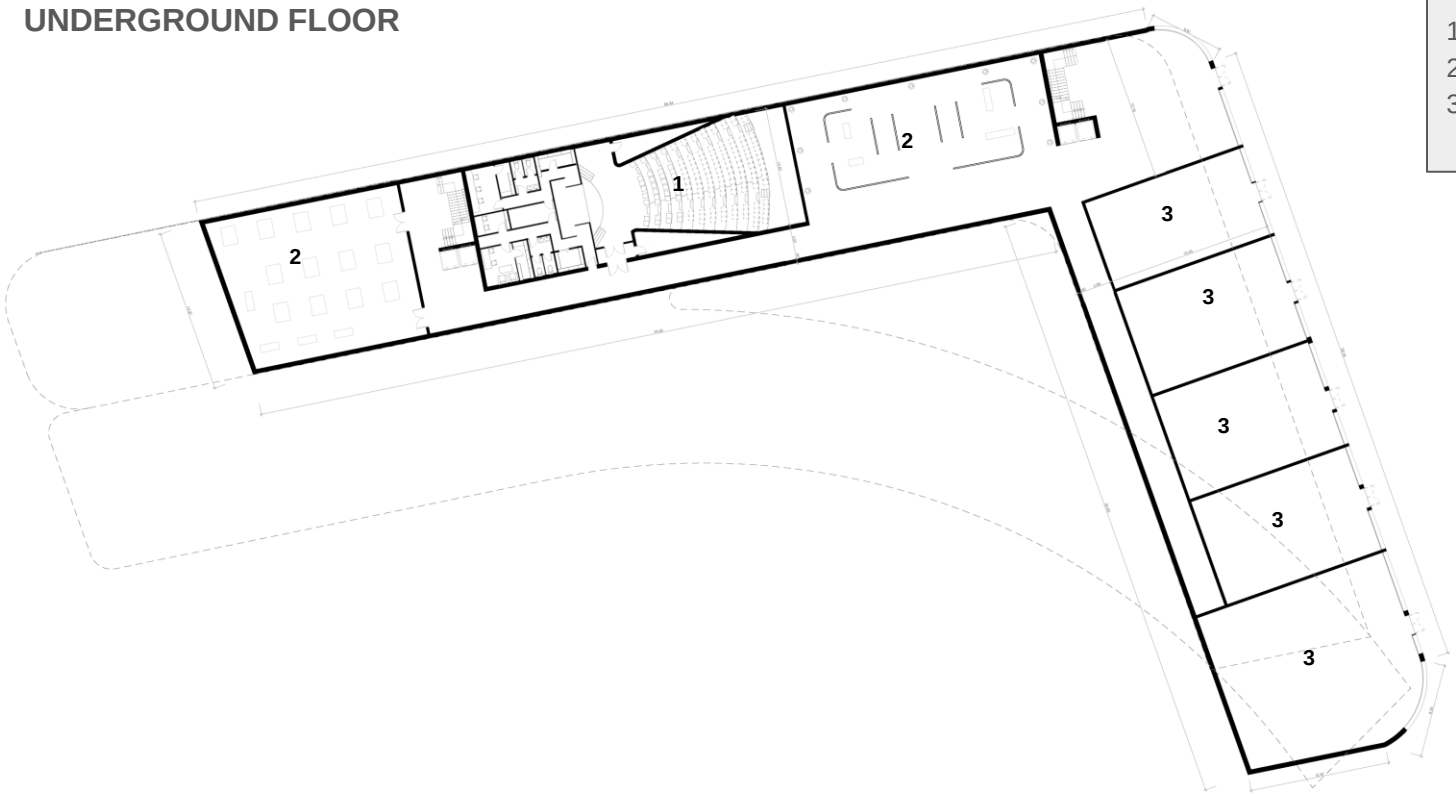
- VERTICAL CIRCULATION
- SHOPS
- HORIZONTAL CIRCULATION
- AMPHITHEATRE
- THE BALMES
- DINNING HALL
- STORAGE
- PLAY ROOM
- MACHINE ROOM
- BIKE ROOM
- ADMINISTRATION AREA
- SANITARY
- DORMITORY
- GYM
- MULTIPURPOSE ROOM
- ARCHIVES
- LIBRARY
- DIGITAL LIBRARY
- MEETING ROOM
- OFFICE SPACES
- OPEN LIBRARY
- RECEPTION
- LABORATORY
- KITCHEN
- PROTOTYPING AREA
- CLOAKROOM
- INFIRMARY
- WORKSHOP AREA
- EXIHIBITION

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

N

UNDERGROUND FLOOR



1- Amphitheater
2- Exhibition area
3- Shops

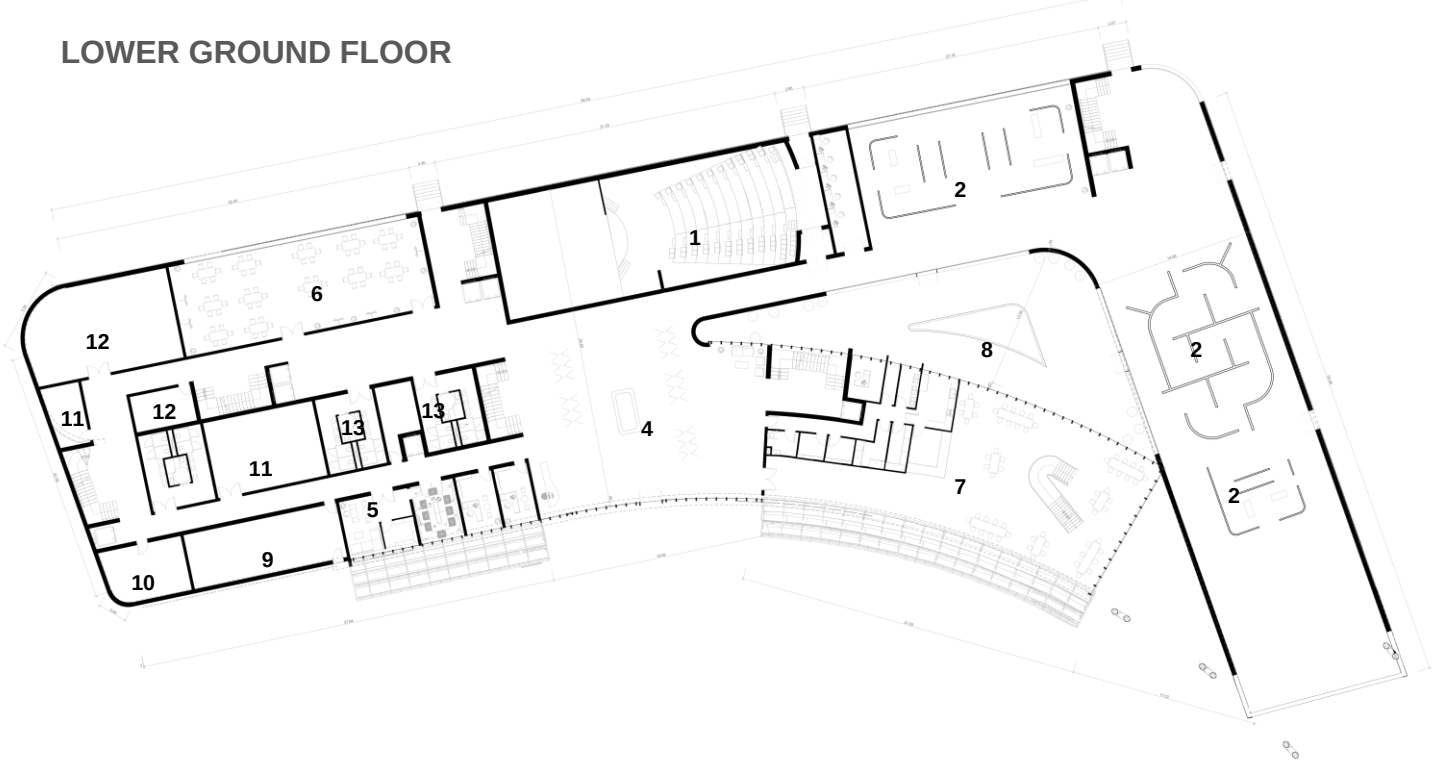
SAINT-GOBAIN

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

N

LOWER GROUND FLOOR



4- Reception

5- Administration area

6- Workshop area

7- Dining Hall

8- Atrium

9- Bike room

10- Machine room

11- Archives

12- Storage

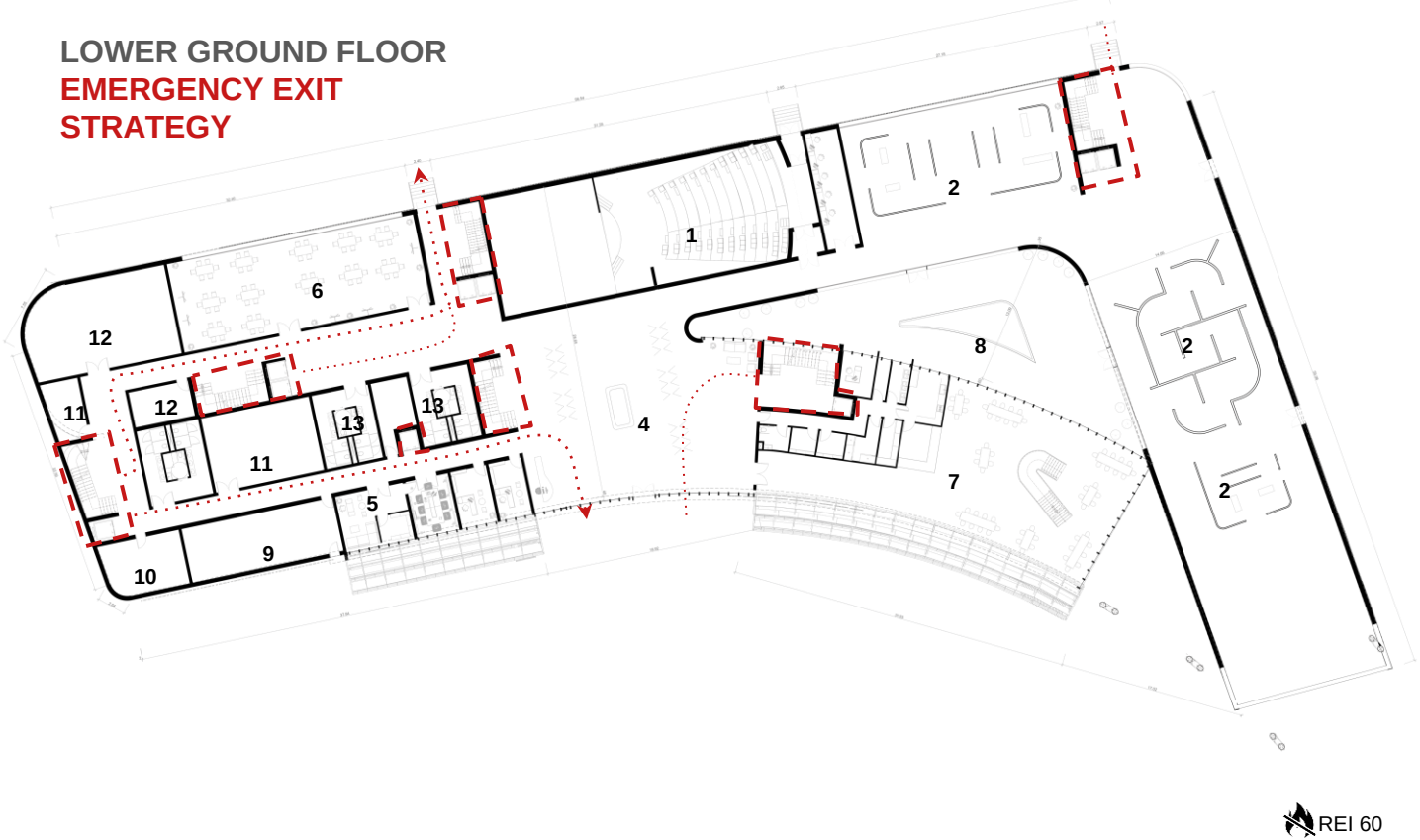
13- Sanitary

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

N

LOWER GROUND FLOOR
EMERGENCY EXIT
STRATEGY



REI 60

4- Reception

5- Administration area

6- Workshop area

7- Dining Hall

8- Atrium

9- Bike room

10- Machine room

11- Archives

12- Storage

13- Sanitary

Emergency exit

STRATEGY I VILLEFONTAINE

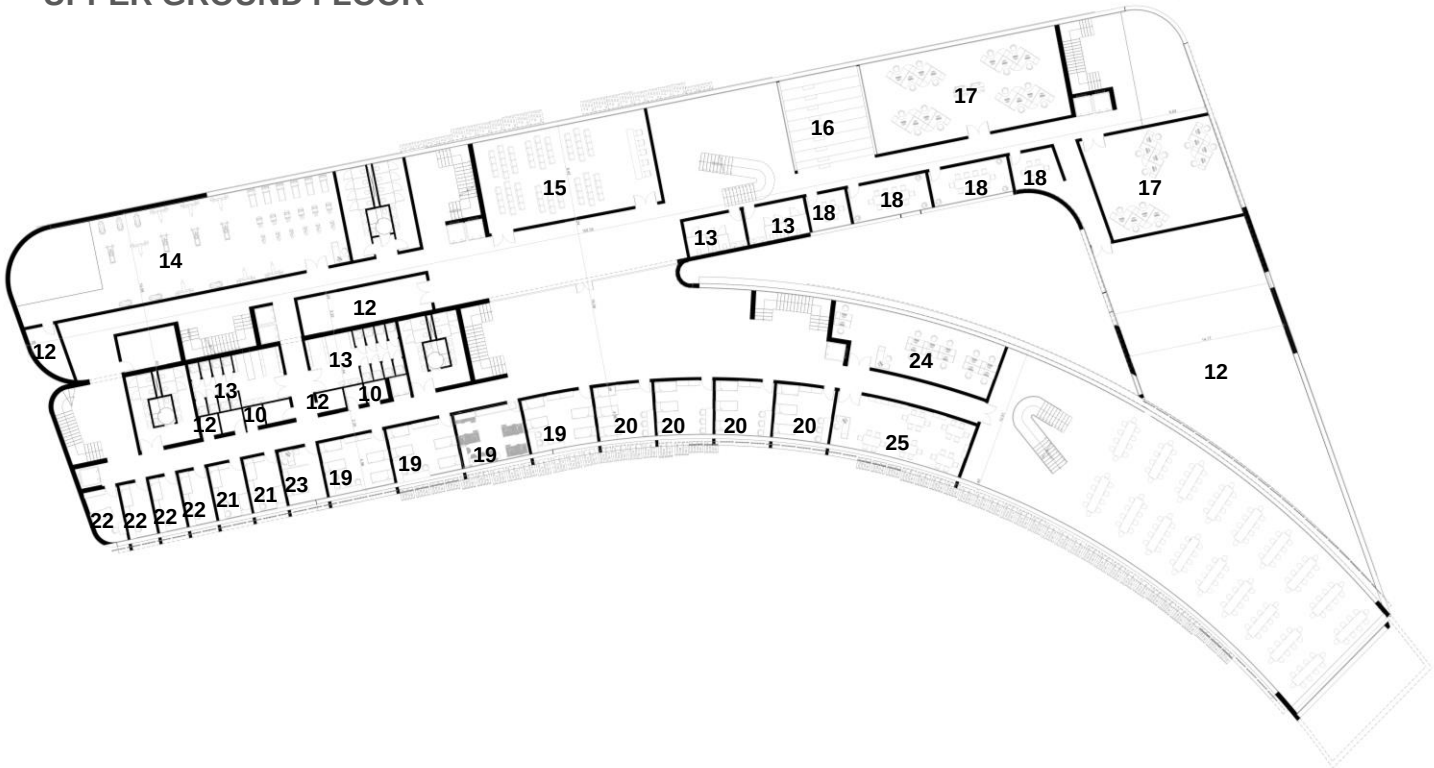
GREEN HAVEN : A living landscape

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

N

UPPER GROUND FLOOR



14- Gym

15- Multi-purpose room

16- Open space library

17- Offices spaces

18 - Meeting room

19- Dormitory 8

20 - Dormitory 6

21- Double room

22- Single room

23- Resident supervisor’s office

24- Digital library

25- Library

SAINT-GOBAIN

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

N

FIRST FLOOR

26- Reception area

27- Laboratory

28- Prototyping area

29- Cloakroom

30- Infirmary

31- Kitchen

32- Play area

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

STRATEGY I VILLEFONTAINE

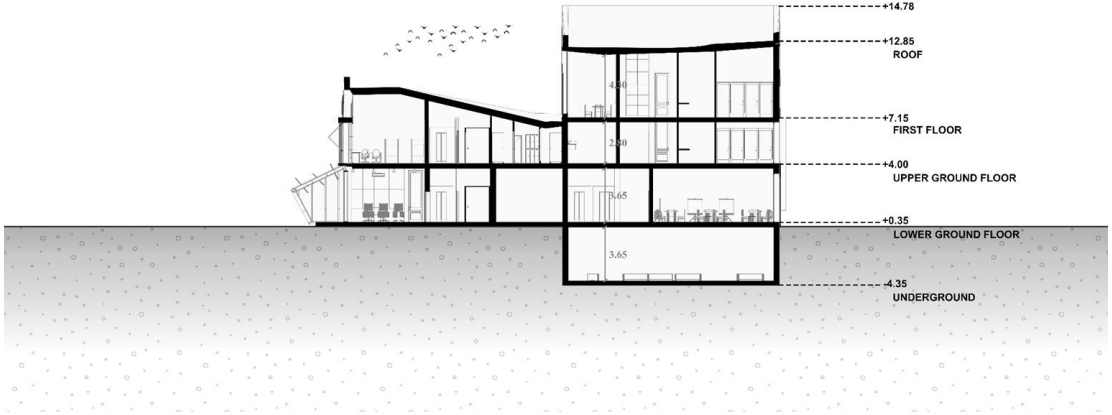
GREEN HAVEN : A living landscape

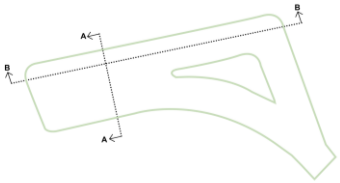
STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

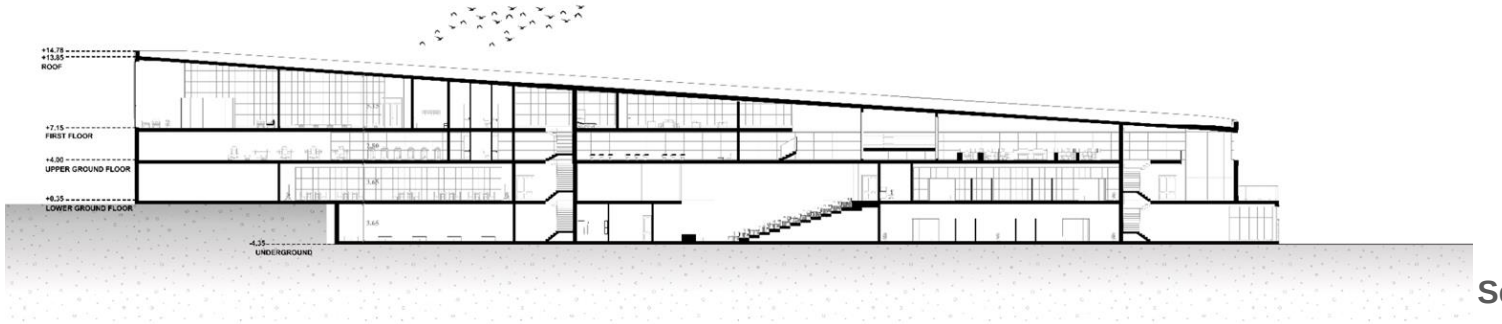
N

SECTIONS





Section AA



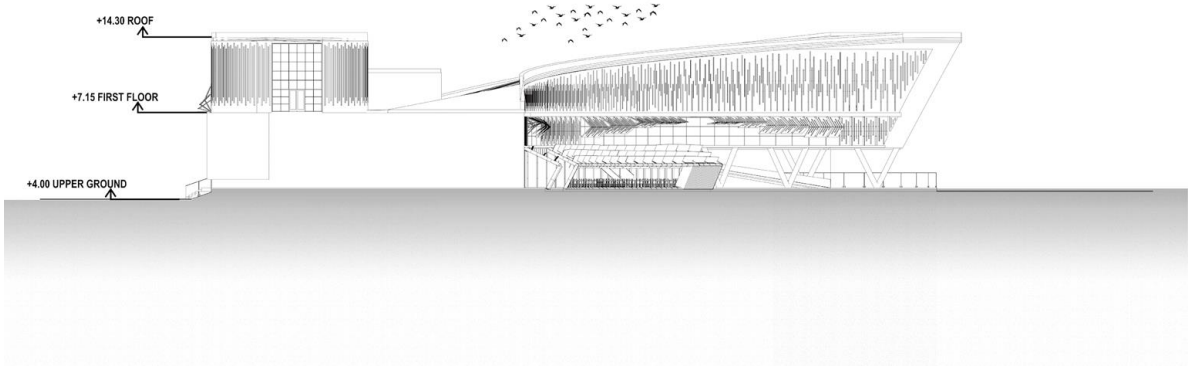
Section BB

SAINT-GOBAIN

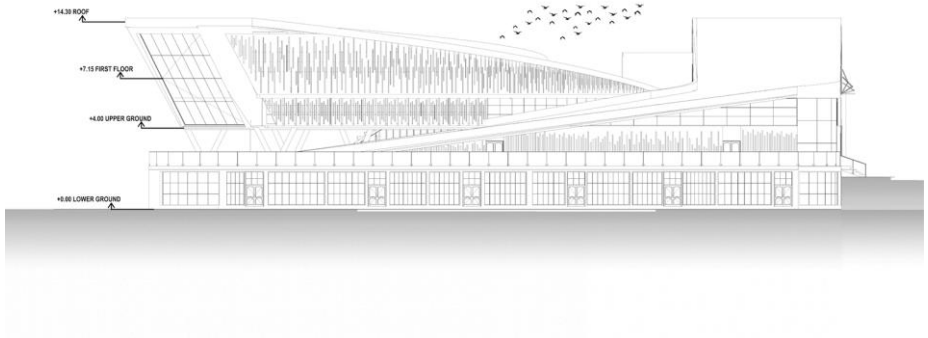
STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

ELEVATIONS



Elevation (WEST)

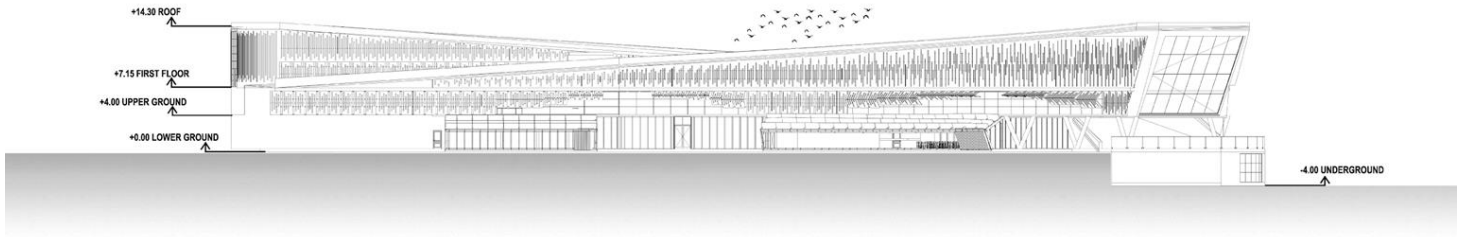


Elevation (EAST)

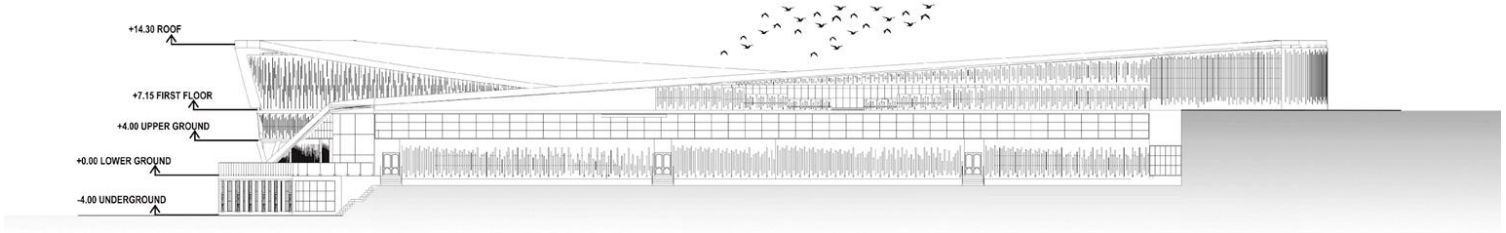
STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

ELEVATIONS



Elevation (SOUTH)



Elevation (NORTH)

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

SAINT-GOBAIN

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

VARIATIONS

SINGLE ROOM

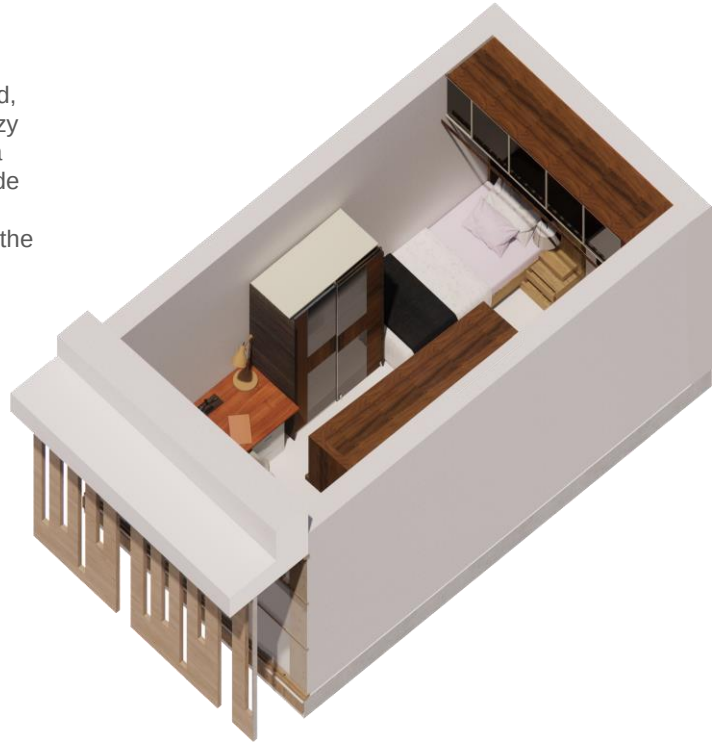
The single room was designed with efficiency and comfort in mind, offering a compact yet functional 10 m² layout, that includes a cozy sleeping area, integrated storage that maximizes usable space, a workspace, and natural lighting from the ECLAZ SUN glass façade to enhance well-being.
This design encourages privacy without sacrificing connection to the outdoor environment, creating a harmonious balance between individual comfort and sustainable living.

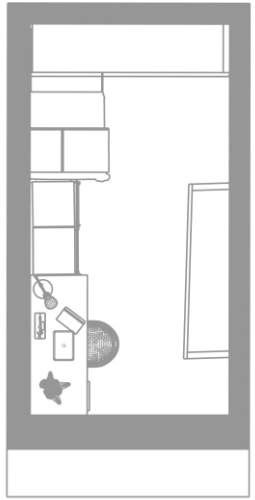
weber SAINT-GOBAIN

isover SAINT-GOBAIN

chryso SAINT-GOBAIN

ECLAZ®SUN





LAYOUT DIAGRAM
AREA= 10 m²

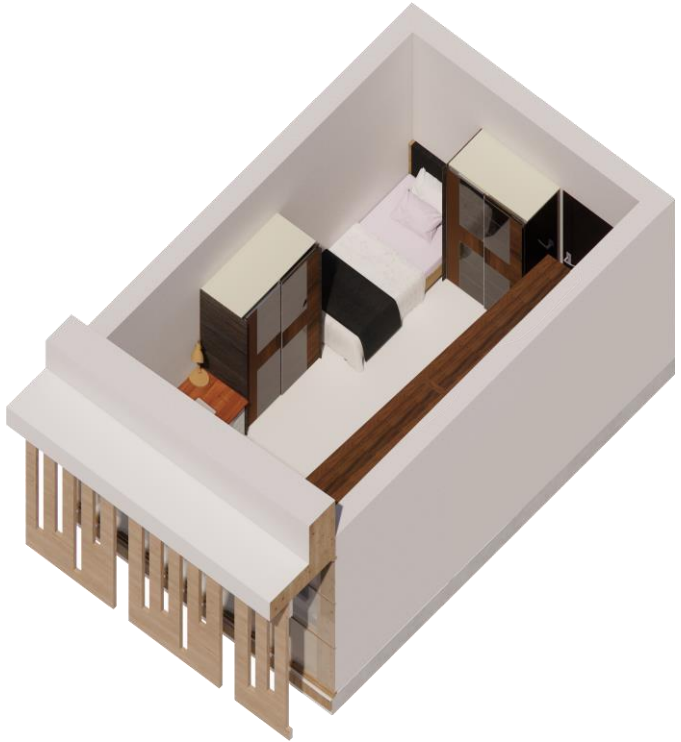
STRATEGY I VILLEFONTAINE

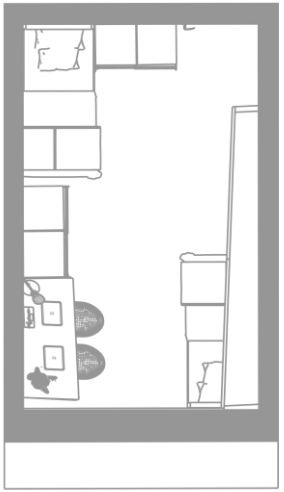
GREEN HAVEN : A living landscape

VARIATIONS

DOUBLE ROOM

The double room was designed with efficiency and comfort in mind, offering a compact yet functional 10 m² layout, that includes a cozy sleeping area, integrated storage that maximizes usable space, a workspace, and natural lighting from the ECLAZ SUN glass façade to enhance well-being.
This design encourages privacy without sacrificing connection to the outdoor environment, creating a harmonious balance between individual comfort and sustainable living.





LAYOUT DIAGRAM
AREA= 12 m²

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

VARIATIONS

DORMITORY : 6 BEDS

This room was designed with efficiency and comfort in mind, offering a compact yet functional 10 m² layout, that includes a cozy sleeping area, integrated storage that maximizes usable space, a workspace, and natural lighting from the ECLAZ SUN glass façade
to enhance well-being.
This design encourages privacy without sacrificing connection to the outdoor environment, creating a harmonious balance between individual comfort and sustainable living.

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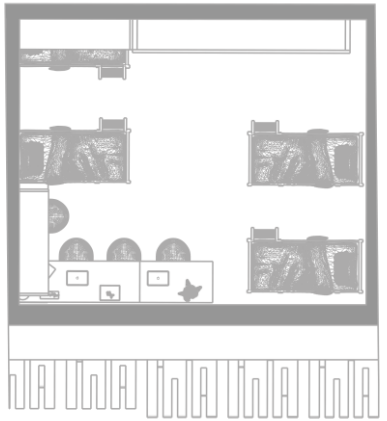
chryso SAINT-GOBAIN

ECLAZ®SUN



LAYOUT DIAGRAM
AREA= 25 m²

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

VARIATIONS

DORMITORY : 8 BEDS

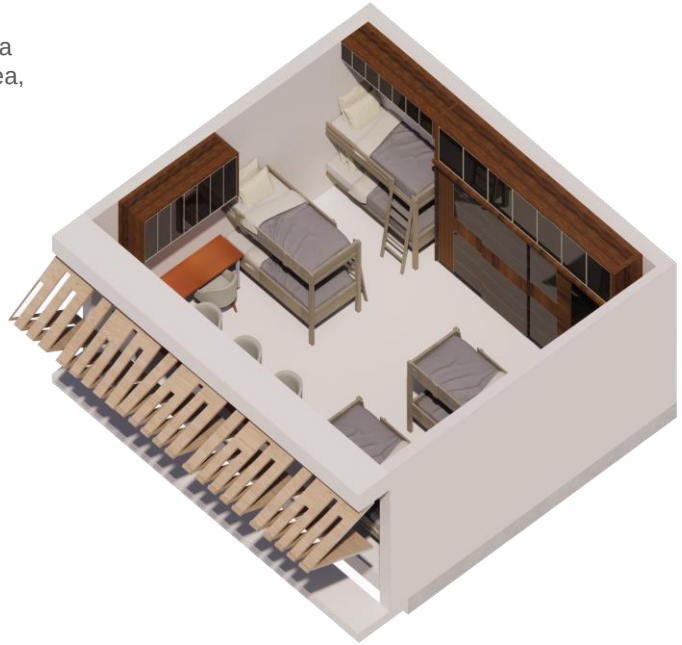
This room was designed with efficiency and comfort in mind, offering a compact yet functional 10 m² layout, that includes a cozy sleeping area, integrated storage that maximizes usable space, a workspace, and natural lighting from the ECLAZ SUN glass façade
to enhance well-being.
This design encourages privacy without sacrificing connection to the outdoor environment, creating a harmonious balance between individual comfort and sustainable living.

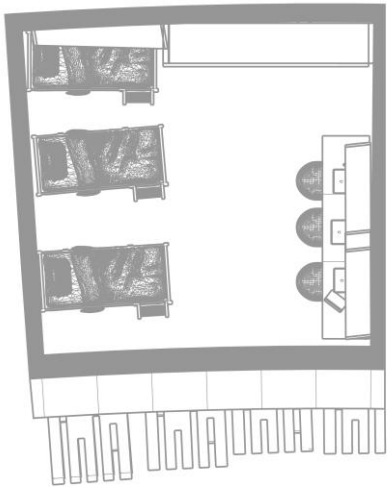
weber SAINT-GOBAIN

isover SAINT-GOBAIN

chryso SAINT-GOBAIN

ECLAZ®SUN





LAYOUT DIAGRAM
AREA= 30 m²

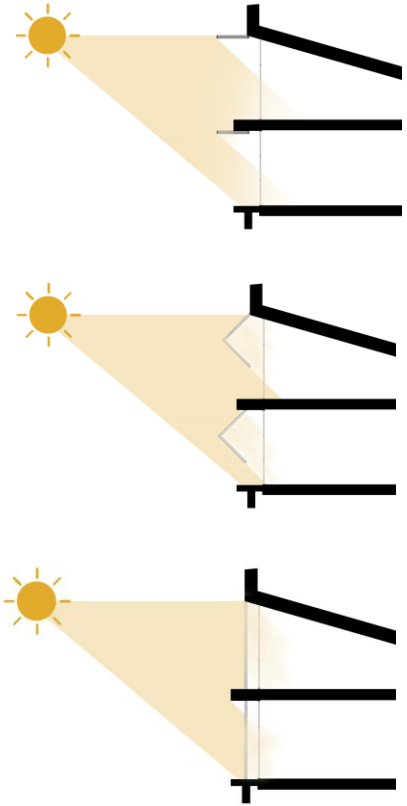
STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

SUSTAINABILITY STRATEGY : SHADING SYSTEM

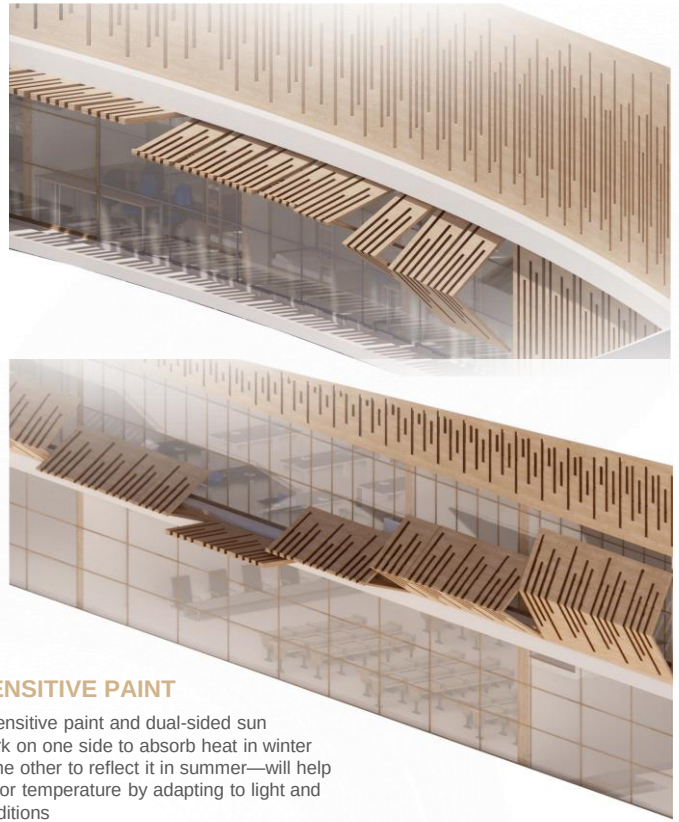


SOUTH SHADING SYSTEM

The chosen horizontal shading system efficiently controls solar exposure on the southern facade by blocking high-angle summer sunlight, reducing heat gain and glare, while allowing beneficial winter sun. Additionally, it enhances daylight quality, provides natural ventilation, and contributes aesthetically to the architectural design.

NORTH SHADING SYSTEM

The horizontal shading on the northern facade primarily serves architectural uniformity, diffuse daylight control, indirect glare mitigation, weather protection, and ventilation enhancement, making it effective despite minimal direct solar heat gain concerns.



Material detail :

Kebony de WOODSTONE

WOODSTONE
Scierie & négoce bois

PHOTOSENSITIVE PAINT

Using photosensitive paint and dual-sided sun blockers—dark on one side to absorb heat in winter and light on the other to reflect it in summer—will help regulate interior temperature by adapting to light and seasonal conditions

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

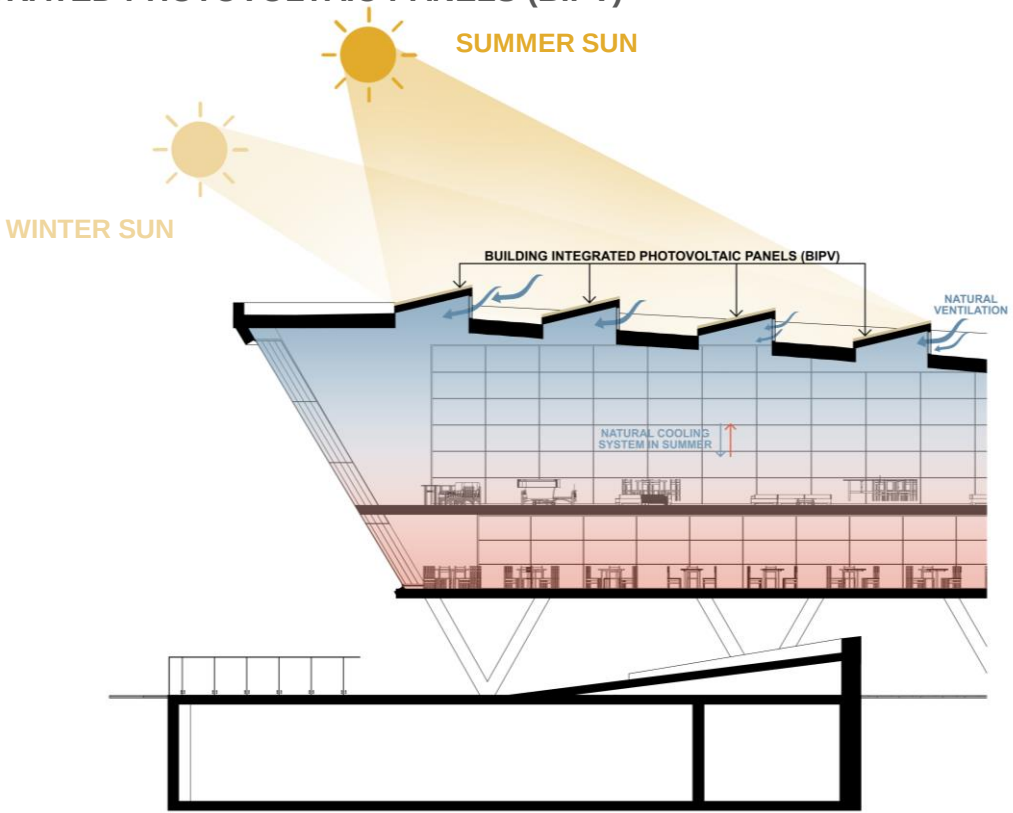
SUSTAINABILITY STRATEGY : BUILDING INTEGRATED PHOTOVOLTAIC PANELS (BIPV)

The opening of the support for the photovoltaic panels on the roof is north-facing so it is protected from direct solar radiation.

This skylight has a triple function:

- Source of natural ventilation
- Source of natural lighting
- Support for photovoltaic panels

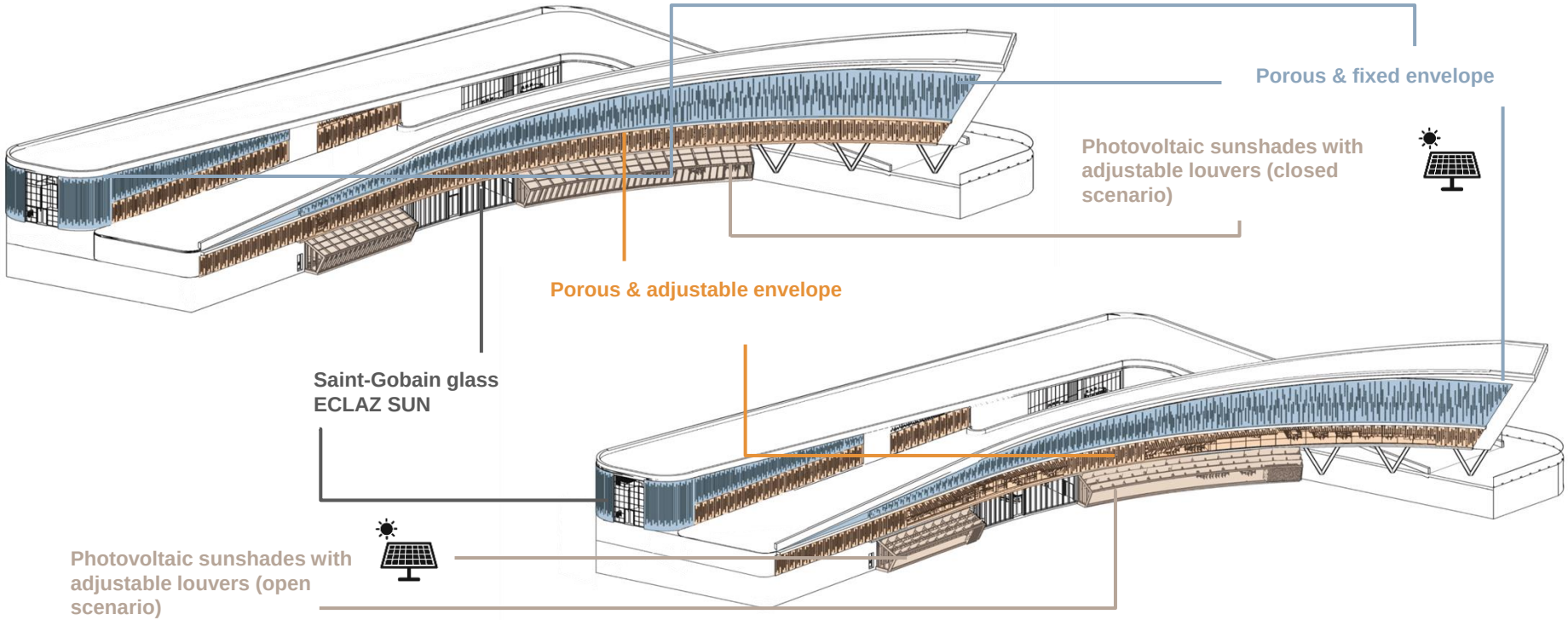
The PV panels are south oriented, so they take advantage of the sun's rays in summer and winter.



STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

SUSTAINABILITY STRATEGY : SYSTEM OF THERMAL COMFORT



STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

SUSTAINABILITY STRATEGY : THERMAL COMFORT

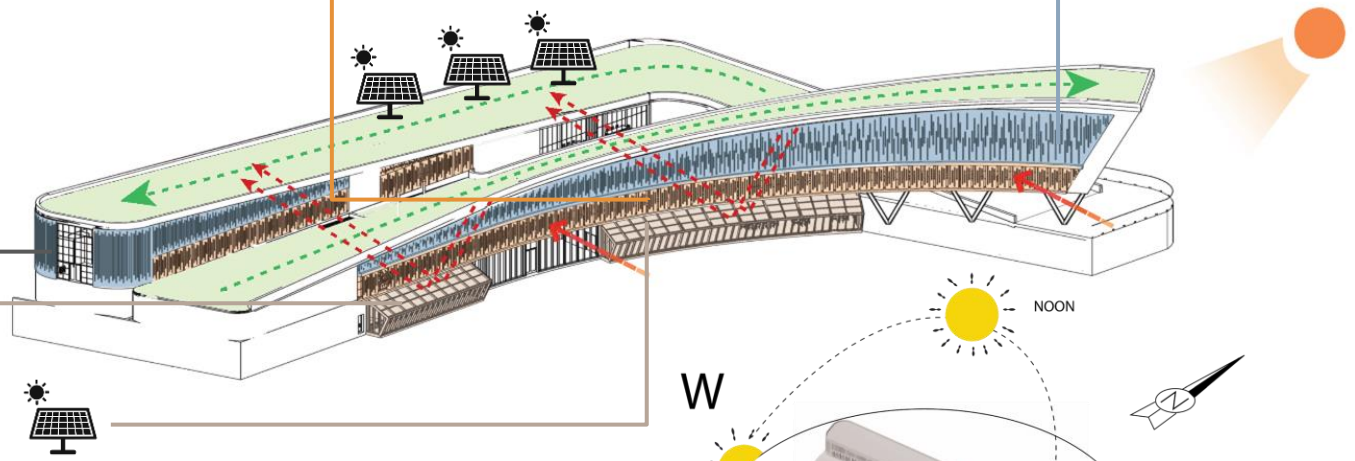
Green sloped roof :
Reduces heat loss in winter and minimizes heat gain in summer, improving energy efficiency.

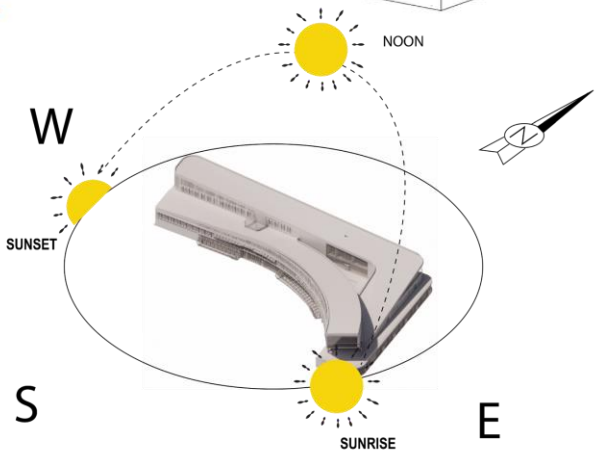
Porous & adjustable envelope
Adjusted to block or allow sunlight, optimizing thermal comfort across seasons.

Porous & fixed envelope
filters sunlight, reducing direct heat gain in summer while allowing some warmth in winter.

Saint-Gobain glass
ECLAZ SUN

Photovoltaic sunshades with adjustable louvers (closed scenario)





In their closed scenario, they block the penetration of the sun's heat into the building, because they can be adjusted from 0 to 180 degrees, providing comfort to suit individual needs. So, in terms of sustainability, photovoltaic panels absorb the heat they reflect and convert it into renewable energy for later use, reducing dependence on fossil fuels and minimizing CO_2 emissions.

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

SUSTAINABILITY STRATEGY : THERMAL COMFORT

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Saint-Gobain glass
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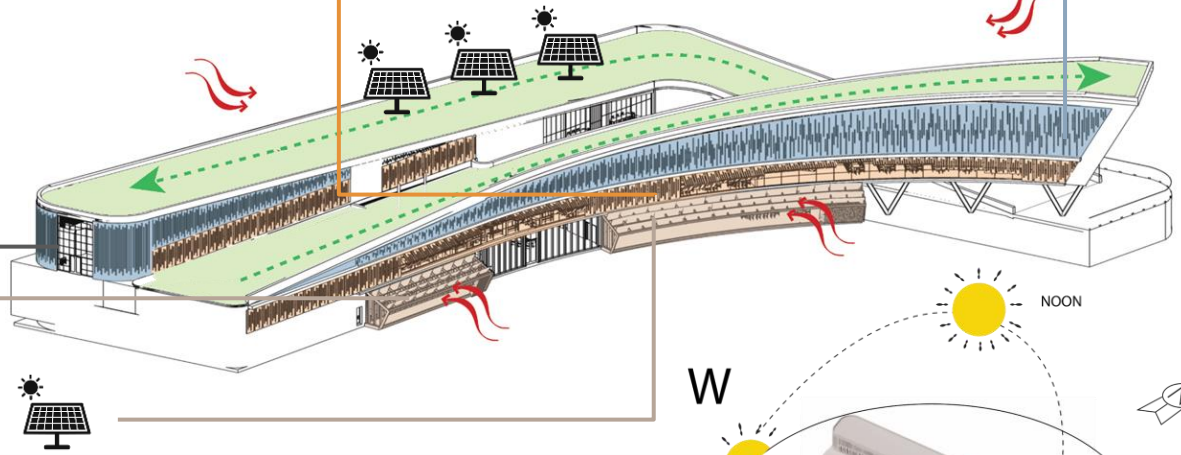
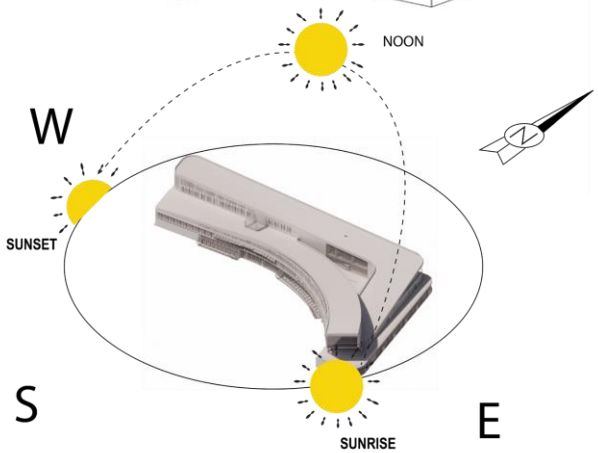
Photovoltaic sunshades with adjustable louvers (closed scenario)





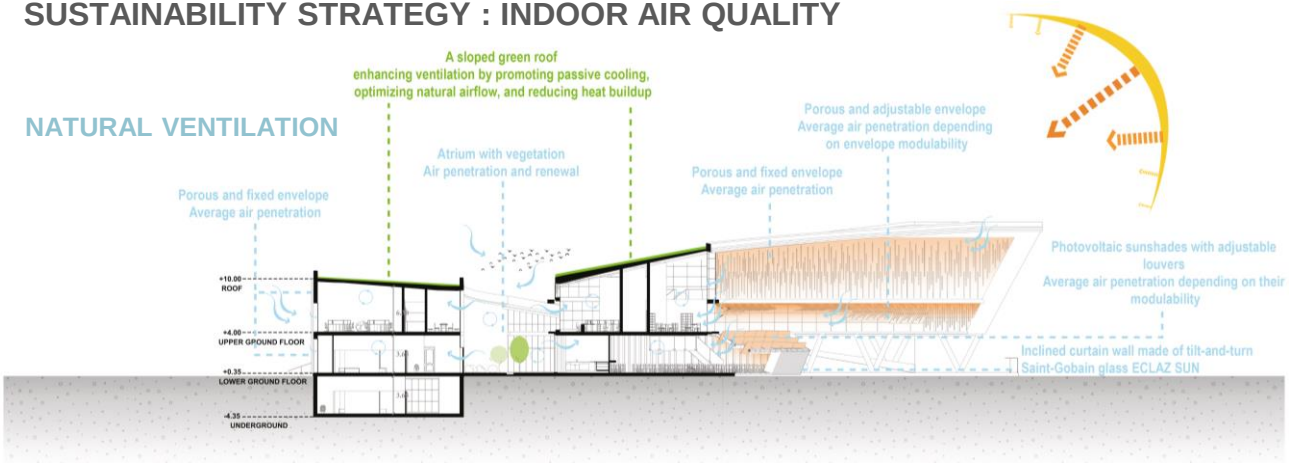
In their open scenario, they allow total penetration of the sun's heat into the building, through the link of openings, which provides energy storage in the pisé walls and thus in the building, creating optimized comfort.

STRATEGY I VILLEFONTAINE

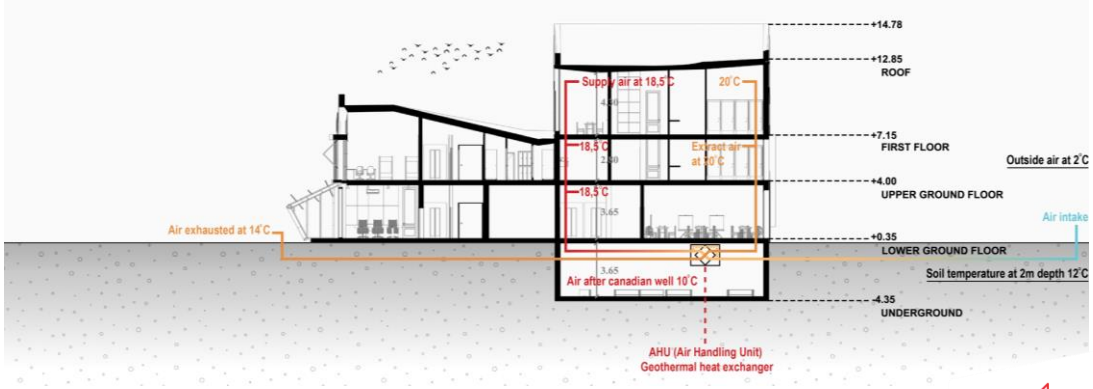
GREEN HAVEN : A living landscape

SUSTAINABILITY STRATEGY : INDOOR AIR QUALITY

NATURAL VENTILATION



MECHANICAL VENTILATION



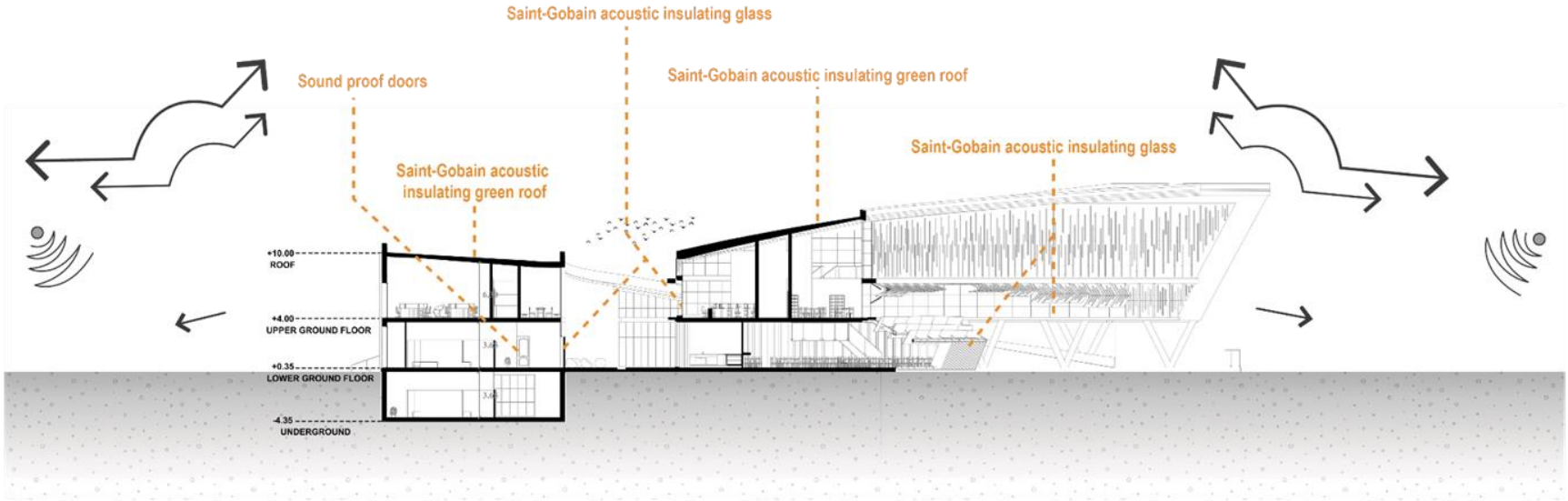
HYGRO-ADJUSTABLE MVHR SYSTEM WITH AHU GEOTHERMAL HEAT EXCHANGER

In winter, fresh air is preheated by the geothermal exchanger before reaching the AHU in the double-flow VMC, reducing heating needs. In summer, the system naturally cools the air, enhancing comfort and energy efficiency.

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

SUSTAINABILITY STRATEGY : ACOUSTIC COMFORT

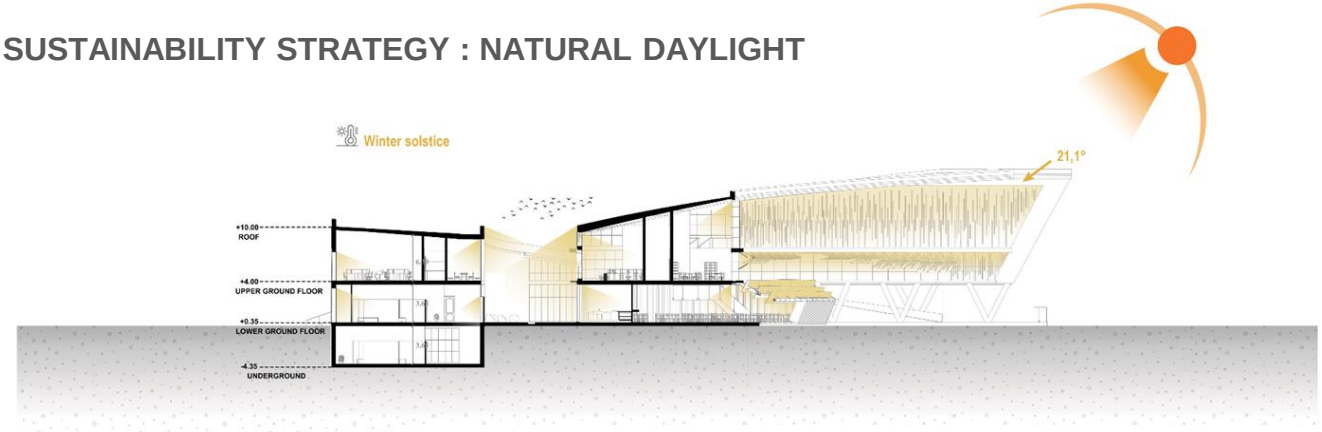


The building design integrates advanced acoustic and thermal strategies using Saint-Gobain insulating glass and green roofs, complemented by soundproof doors, to significantly enhance interior comfort and energy efficiency

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

SUSTAINABILITY STRATEGY : NATURAL DAYLIGHT

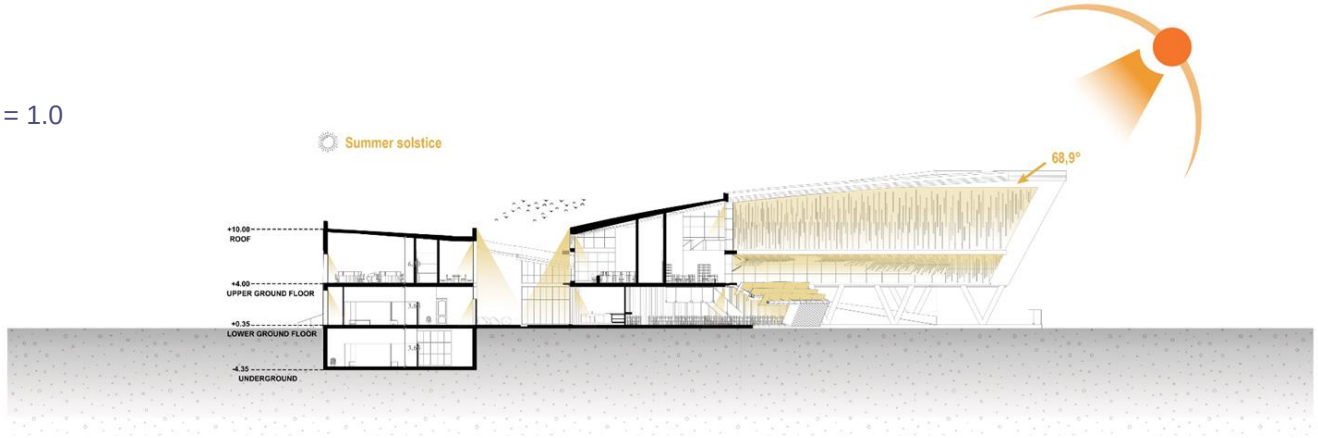


Winter solstice

Light Transmittance (TL) = 72%
Thermal transmission coefficient (Ug) = 1.0
Solar factor (g) = 0,38

ECLAZ®SUN

Summer solstice

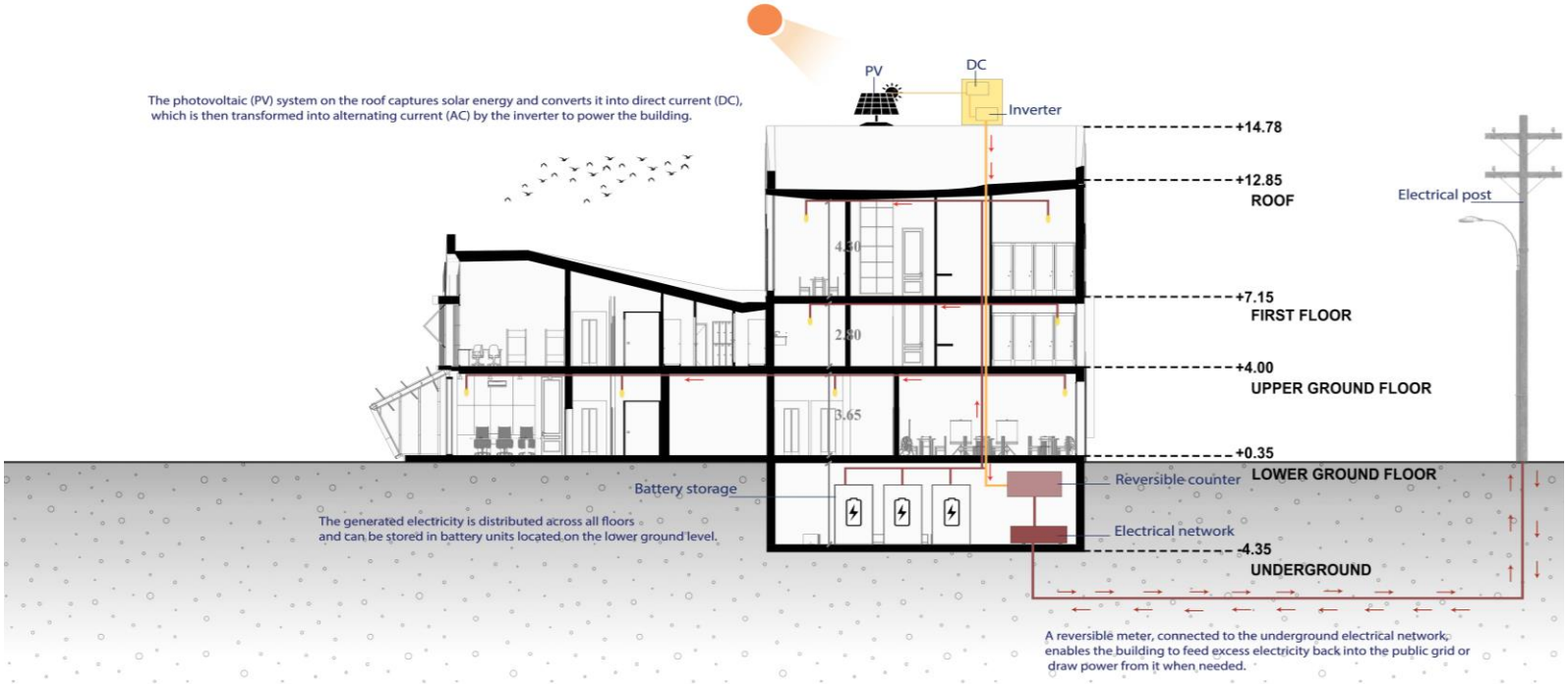


SAINT-GOBAIN

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

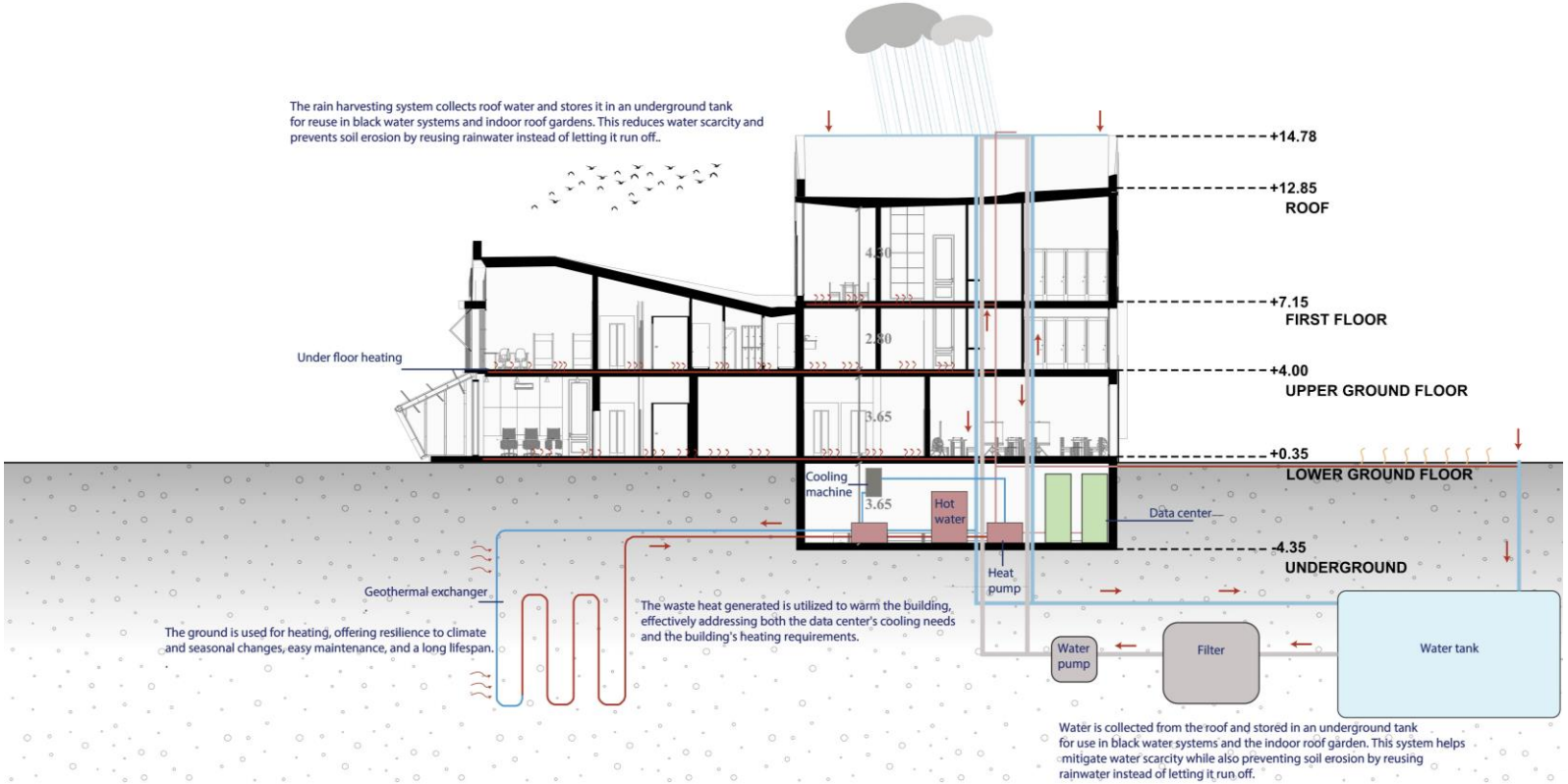
SUSTAINABILITY STRATEGY : PHOTOVOLTAIC PANELS : NET POSITIVE ENERGY BUILDING (NPEB)



STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

SUSTAINABILITY STRATEGY : RAINWATER HARVESTING & GEOTHERMAL HEATING/COOLING



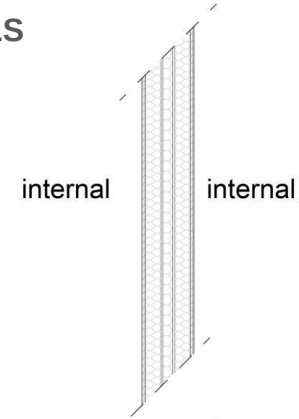
STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

TECHNICAL DETAILS

Internal wall
Thickness = 265 mm

U = 0.179 W/m²·K
$D_{nT,w}$ = 66 dB

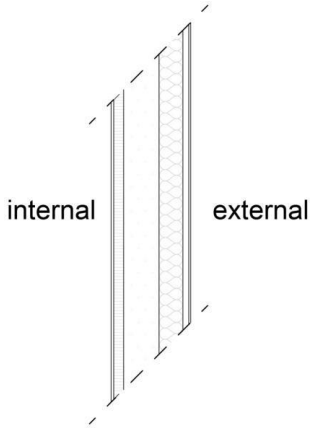


1. Saint-Gobain Fine Paint 5mm
2. Saint-Gobain Saint-Gobain Gyproc Habito® Board 12.5mm
3. Saint-Gobain ISOVER VARIO® KM Duplex UV 1mm
4. Saint-Gobain ISOVER Glass Wool 80mm High-Density Acoustic Mat 9mm
5. Aluminum Profile Frame 50mm
6. High-Density Acoustic Mat 9mm
7. Saint-Gobain ISOVER Glass Wool 80mm
8. Saint-Gobain ISOVER VARIO® KM Duplex UV 1mm
9. Saint-Gobain Saint-Gobain Gyproc Habito® Board 12.5mm Saint-Gobain Fine Paint 5mm

REI 60

External wall
Thickness=420 mm

U = 0.178 W/m²·K
$D_{nT,w}$ = 62 dB



1. Saint-Gobain Weber render(Webwertherm XM) 10mm
2. Air gap with mechanical fixing system 30mm
3. Saint-Gobain Isover Glass Wool Insulation 120mm
4. CHRYSO ENVIROMix ULC Low Carbon concrete solution180mm
5. Saint-Gobain Isover Rock Wool Insulation 50mm
6. Saint-Gobain Gyproc Habito® Plasterboard 10mm

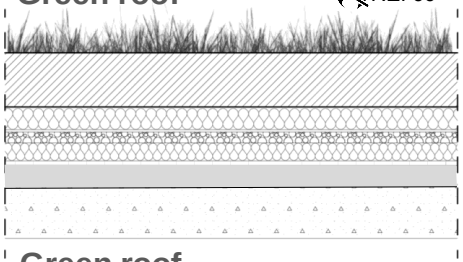
REI 90

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

TECHNICAL DETAILS

Green roof — REI 60



Green roof

Thickness = 612.5 mm

1. Intensive soil mix 150mm
2. Filter fabric 4mm
3. Water-retention and drainage board diadem build-up60mm Storage mat 6mm
4. Root barrier 30mm
5. Thermal insulation with vapour barrier layer isover arena cover 50mm
6. Wederdry roof Natura waterproofing Membrane protection 12.5mm
7. ISOVER Multimax 100 mm
8. CHRYSO ENVIROMix ULC Low Carbon concrete solution) 200 mm

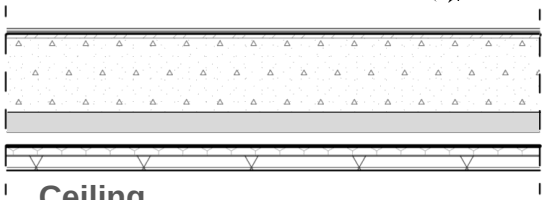
U = 0.176W/m²·K

$D_{nT,w}$ = 63 dB

$L_{nT,w'}$ = 50 dB

Floor

Thickness= 220 mm — REI 90



1. Linoleum Flooring (Natural Vinyl Alternative) 5mm
2. Saint-Gobain Weber Floor Screed or Epoxy Coating 8mm
3. Saint-Gobain Acoustic Mat or Weber Self-Leveling Compound 7mm
4. CHRYSO ENVIROMix ULC Low Carbon concrete solution) 200 mm

Ceiling

Thickness = 130 mm — REI 60

1. Isover Multimax 80mm
2. Air gap suspended ceiling 30mm
3. Ecophon Master 20mm
4. Gyproc GHE HabitoR 30mm

U = 0.250W/m2·K
$D_{nT,w}$ = 62 dB
$L_{nT,w'}$ = 52 dB

ecophon SAINT-GOBAIN
chryso SAINT-GOBAIN
gyproc SAINT-GOBAIN
weber SAINT-GOBAIN
isover SAINT-GOBAIN

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

STRATEGY I VILLEFONTAINE

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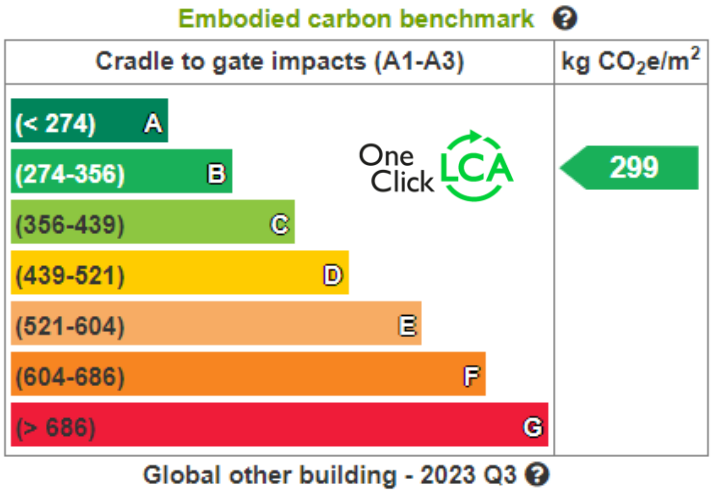
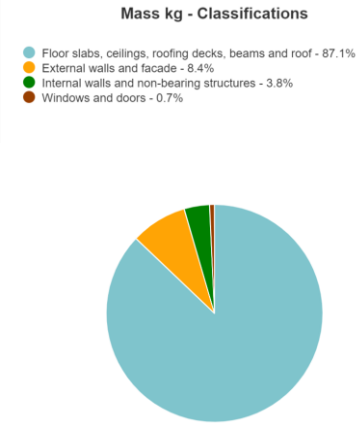
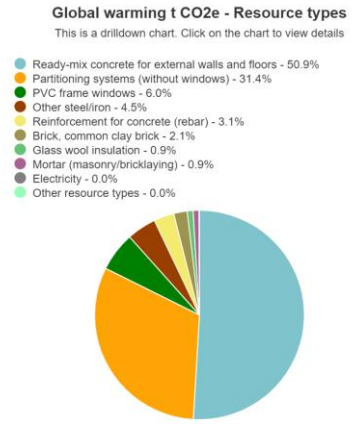
STRATEGY I VILLEFONTAINE

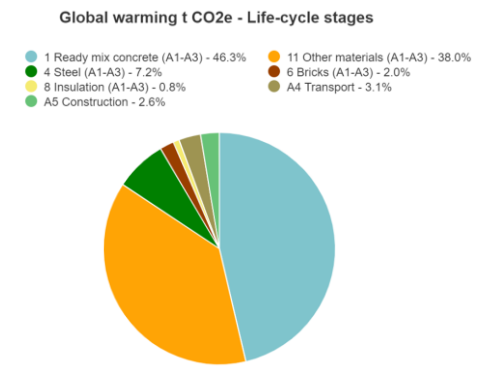
GREEN HAVEN : A living landscape

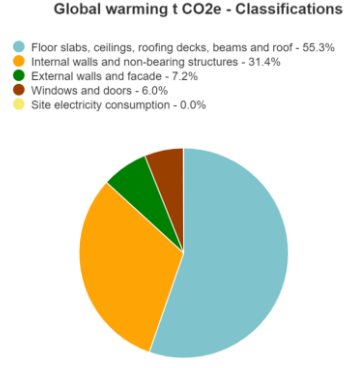
LIFE CYCLE ANALYSIS











STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

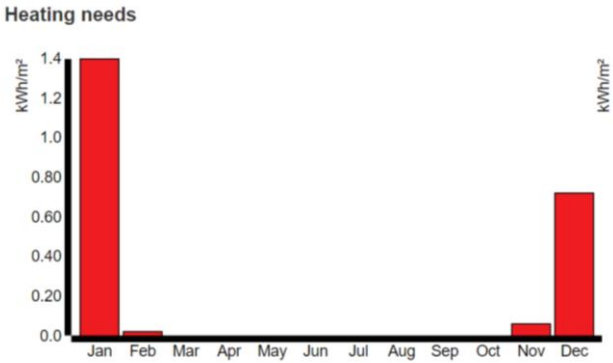
LIFE CYCLE ANALYSIS

Indicator	Building [kWh/m²]	Limit value [kWh/m²]	Comply
Heating needs	2,2	15,0	Yes
Cooling needs	0,0	15,0	Yes

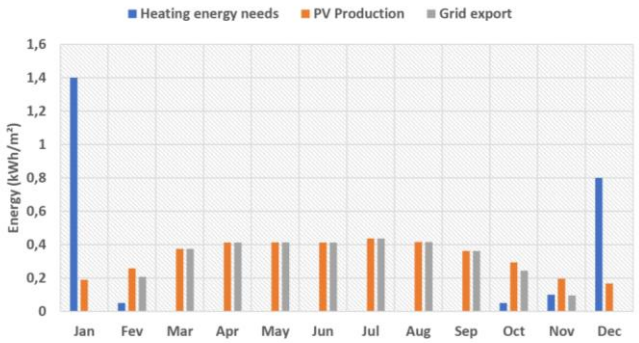
Lighting autonomy 300 Lux	Autonomy [%]	Required [%]	Comply
TZ: SPACE 1 DAYLIGHTINGCONTROLS	77,0	60.0 %	Yes
TZ: SPACE 2 DAYLIGHTINGCONTROLS	77,5	60.0 %	Yes
TZ: SPACE 3 DAYLIGHTINGCONTROLS	78,6	60.0 %	Yes
TZ: SPACE 4 DAYLIGHTINGCONTROLS	77,5	60.0 %	Yes
TZ: SPACE 5 DAYLIGHTINGCONTROLS	80,3	60.0 %	Yes
TZ: SPACE 6 DAYLIGHTINGCONTROLS	80,0	60.0 %	Yes
TZ: SPACE 7 DAYLIGHTINGCONTROLS	80,1	60.0 %	Yes

Summer comfort (overheating % of season)	Overheating [%]	Required [%]	target [%]	Comply
TZ: SPACE 1	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 2	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 3	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 4	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 5	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 6	0,0	10.0 %	5.0 %	Yes
TZ: SPACE 7	0,0	10.0 %	5.0 %	Yes

Simulation by SG SaveI plugin for SketchUp



Simulation by SG SaveI plugin for SketchUp



Simulation by PVGis

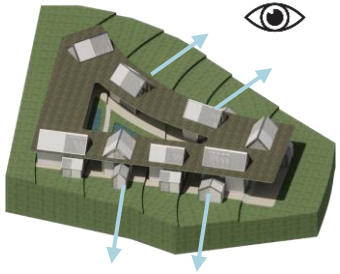
The building not only complies with all regulatory targets but also sets a high standard in terms of energy efficiency, daylight availability, and occupant comfort, positioning it as a high-performance, environmentally responsible design and qualifying it as a model for sustainable and energy community-oriented design.

STRATEGY I VILLEFONTAINE

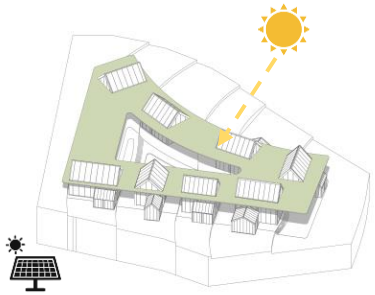
GREEN HAVEN : A living landscape

LANDSCAPE : THE SLOPES OF SUSTAINABILITY : A PROTOTYPE VILLAGE IN HARMONY WITH NATURE

The overall building geometry creates and reinforces the sense of community, while the green roof facilitates the rain water collection



The buildings are designed as a prototype, connected by a common roof. The intimate internal courtyard offers framed views of the surrounding rural landscape.



The green roof design maximizes sunlight capture throughout the day, provides covered outdoor spaces, and generates energy through PV panels.

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

LANDSCAPE : THE SLOPES OF SUSTAINABILITY : A PROTOTYPE VILLAGE IN HARMONY WITH NATURE

STRATEGY I VILLEFONTAINE

GREEN HAVEN : A living landscape

LANDSCAPE : THE SLOPES OF SUSTAINABILITY : A PROTOTYPE VILLAGE IN HARMONY WITH NATURE

BALMES SYNERGY

"Sustainability in architecture is not about creating limitations, but about designing possibilities that respect the environment, enhance human well-being, and endure over time."

SAINT-GOBAIN