

ARCHITECTURE STUDENT CONTEST
20th INTERNATIONAL EDITION, NORD ISÈRE 2025

TEAM MEMBERS

Saint-Gobain



JESSICA JOHN

B Arch 3rd Year



ADWAITH ANILKUMAR

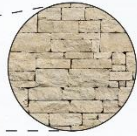
B Arch 3rd Year



KASHYAPI

B Arch 5th Year





Stone

Stone is 1 of the easy available resouse in both the sites.



Oak Wood

Wood is abundant resouse in france.
Provide better insulation.

Site A : Reconstruction



Site B : Construction



Visual connectivity

A seamless blend and transparancy between the outer and inner surroundings.
Achieved though the use of glass, this brings in more breathability in both the designs.

Blend With Surrounding

Both the forms are designed to blend with their neighbouring surroundings.
Attic is completely used as a visual and functional space in both the sites.

Wooden Vista Vista

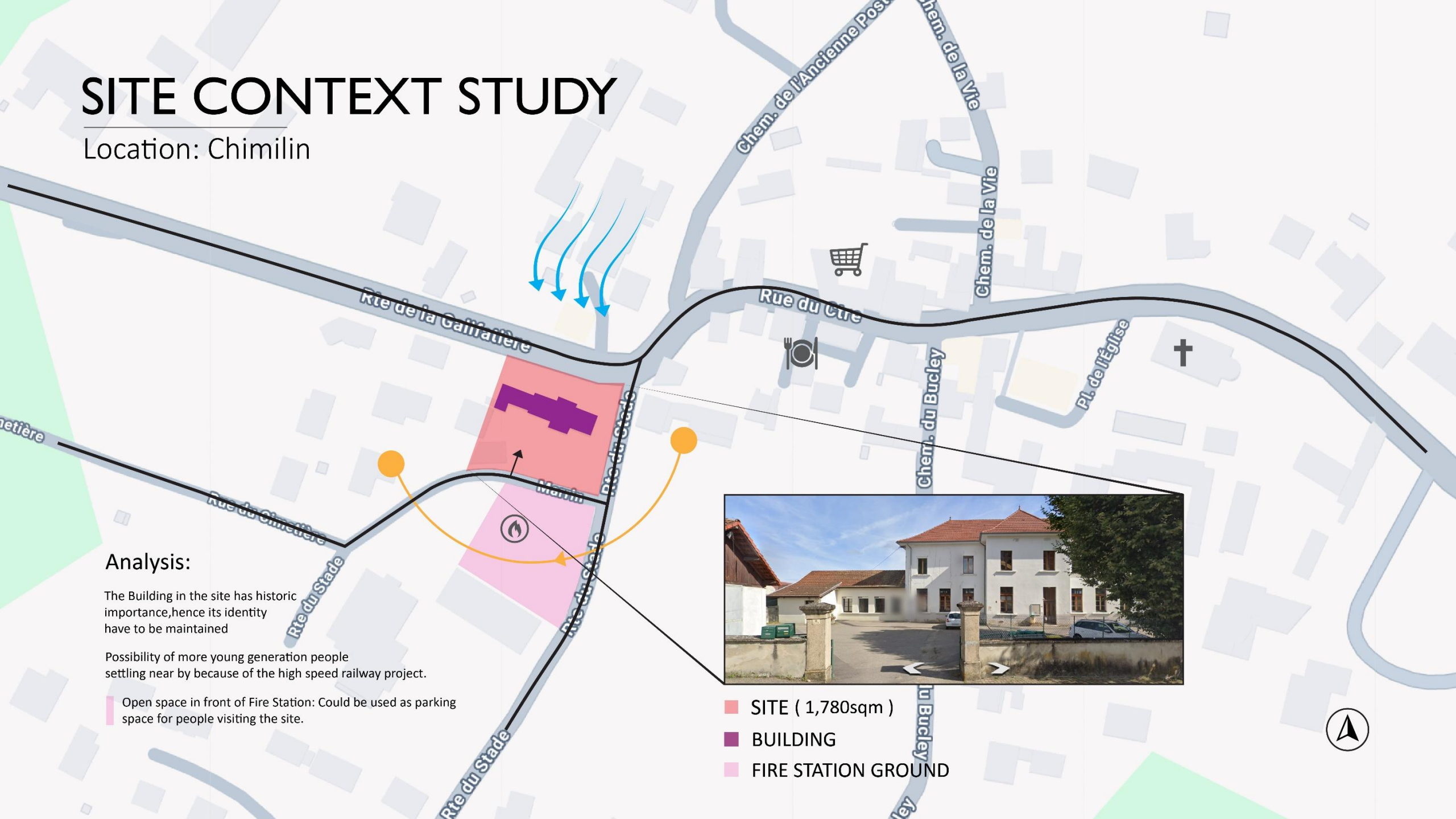
SITE A (RENOVATION)

Chimilin



SITE CONTEXT STUDY

Location: Chimilin



Analysis:

The Building in the site has historic importance, hence its identity have to be maintained

Possibility of more young generation people settling near by because of the high speed railway project.

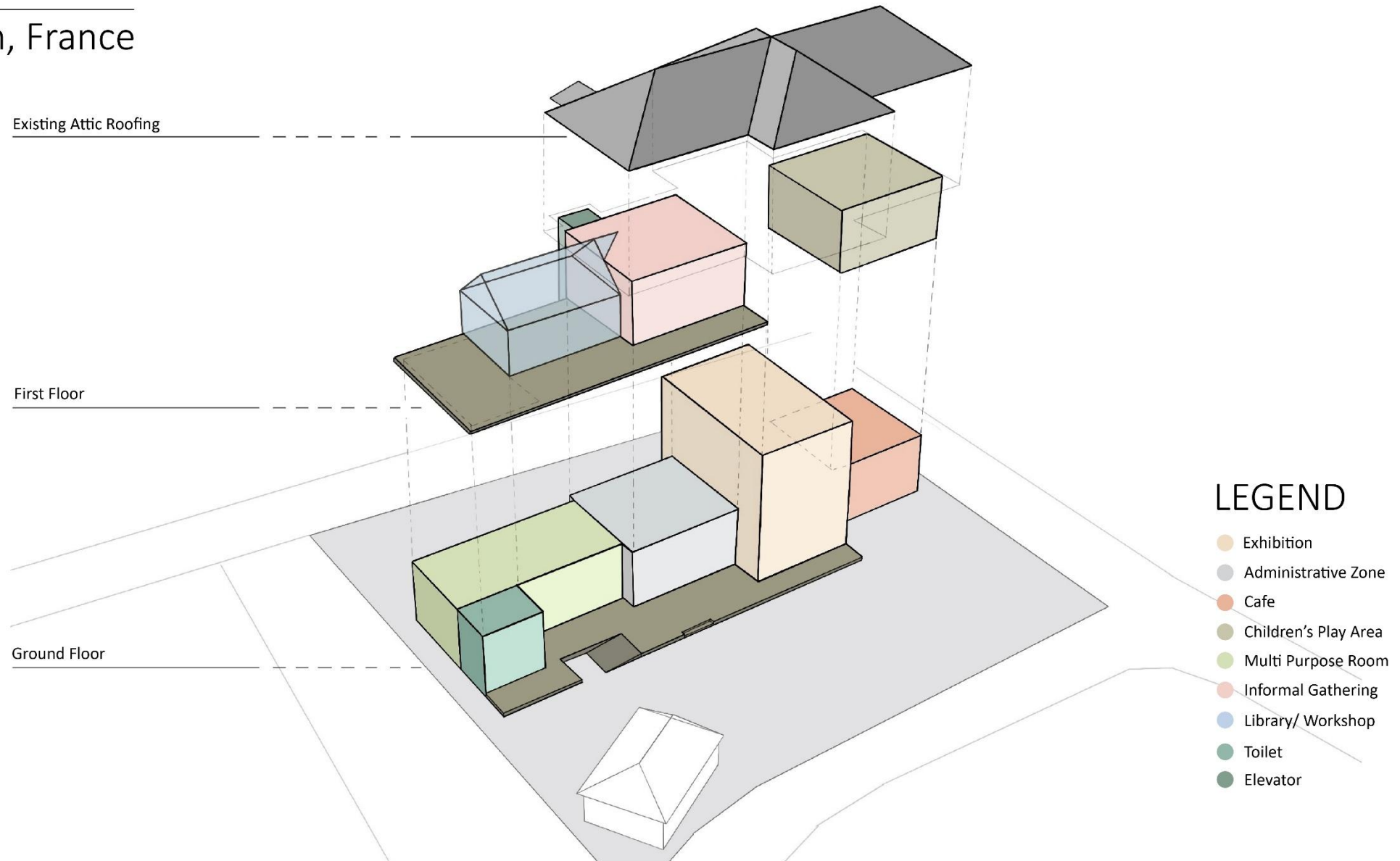
Open space in front of Fire Station: Could be used as parking space for people visiting the site.



- SITE (1,780sqm)
- BUILDING
- FIRE STATION GROUND

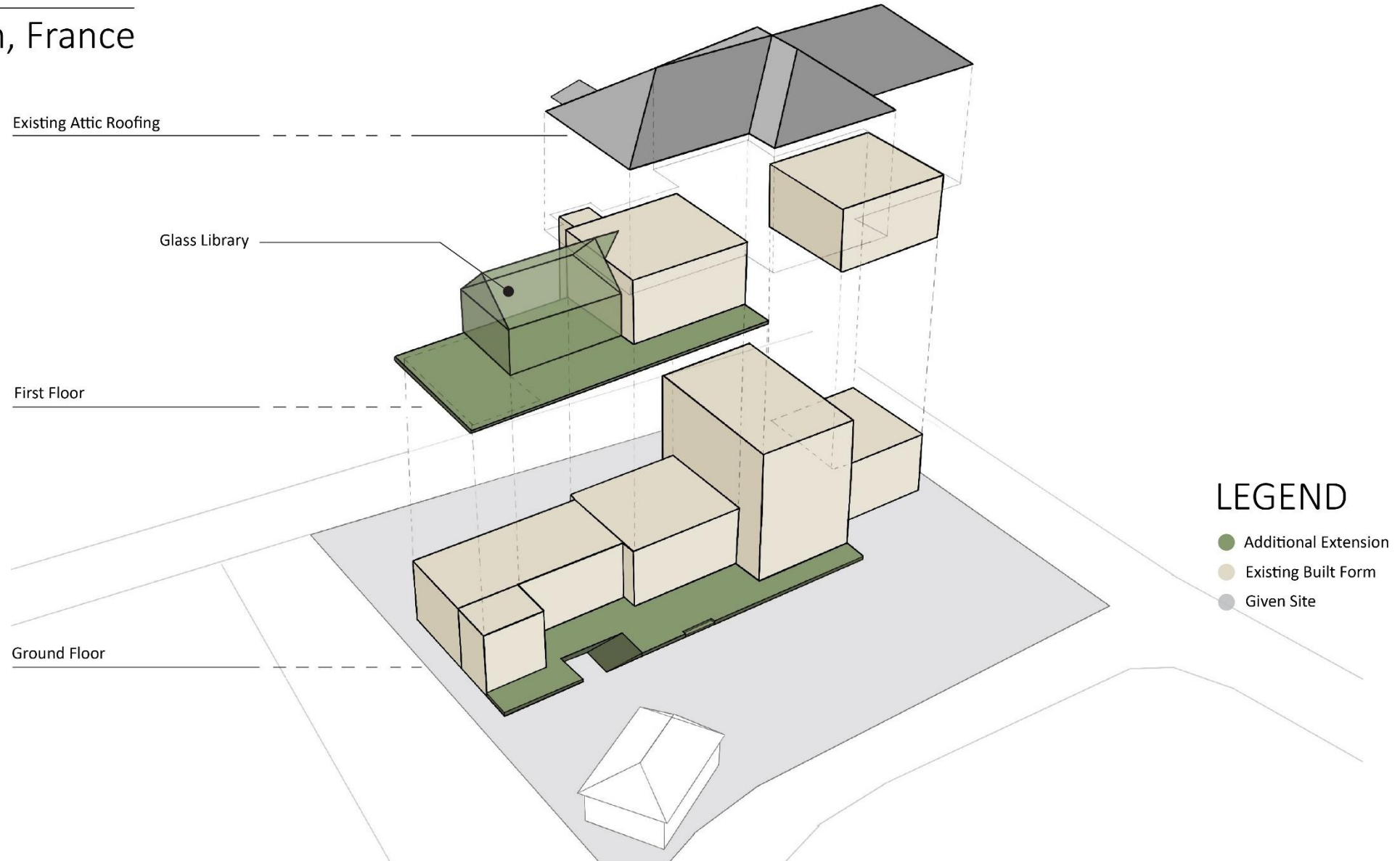
AXONOMETRIC LAYERING

Chimilin, France



AXONOMETRIC LAYERING

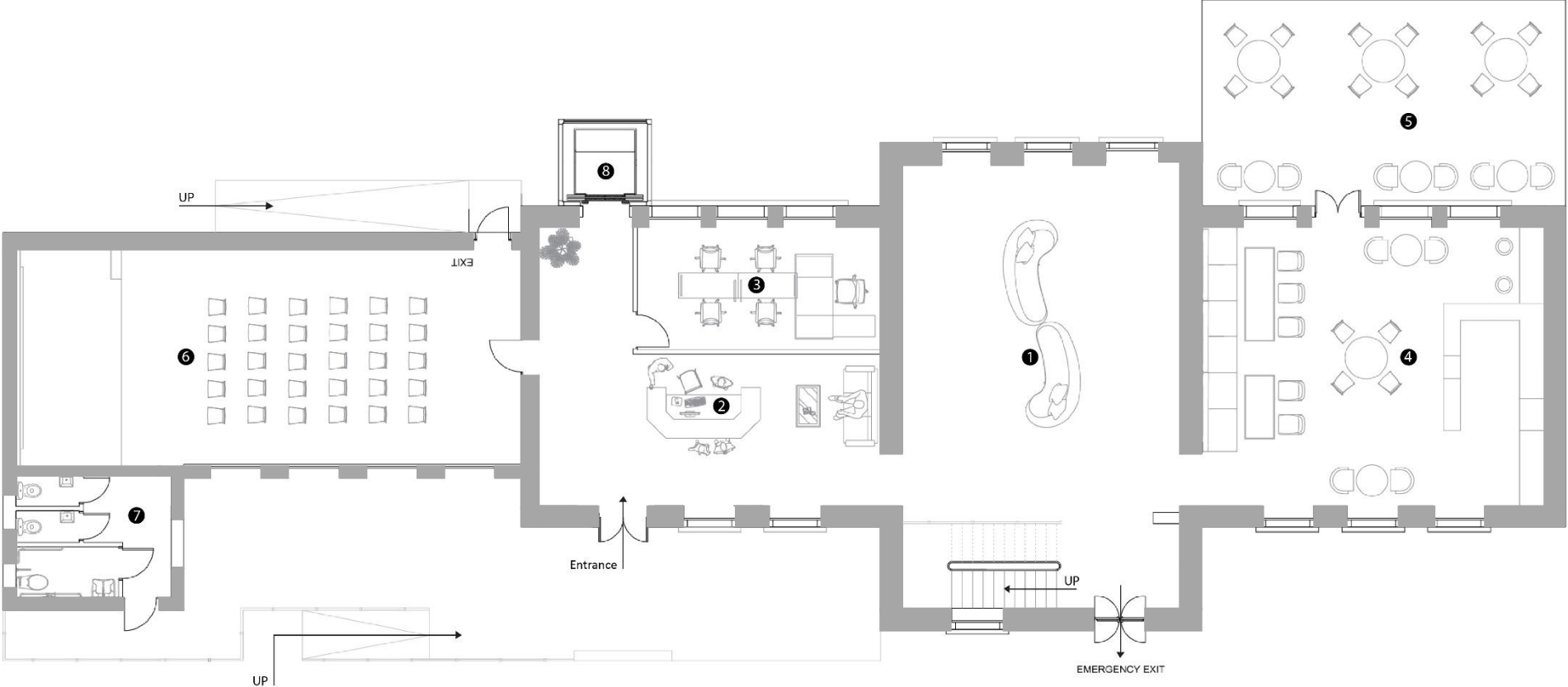
Chimilin, France





GROUND FLOOR PLAN

Chimlin, Renovation Site



LEGEND

- 1 Exhibition Area
- 2 Reception
- 3 Administrative Area
- 4 Cafe
- 5 Outdoor Cafe Seating
- 6 Multi Purpose Room
- 7 Toilet
- 8 Elevator



CAFE

Chimilin



EXHIBITION AREA

Chimilin

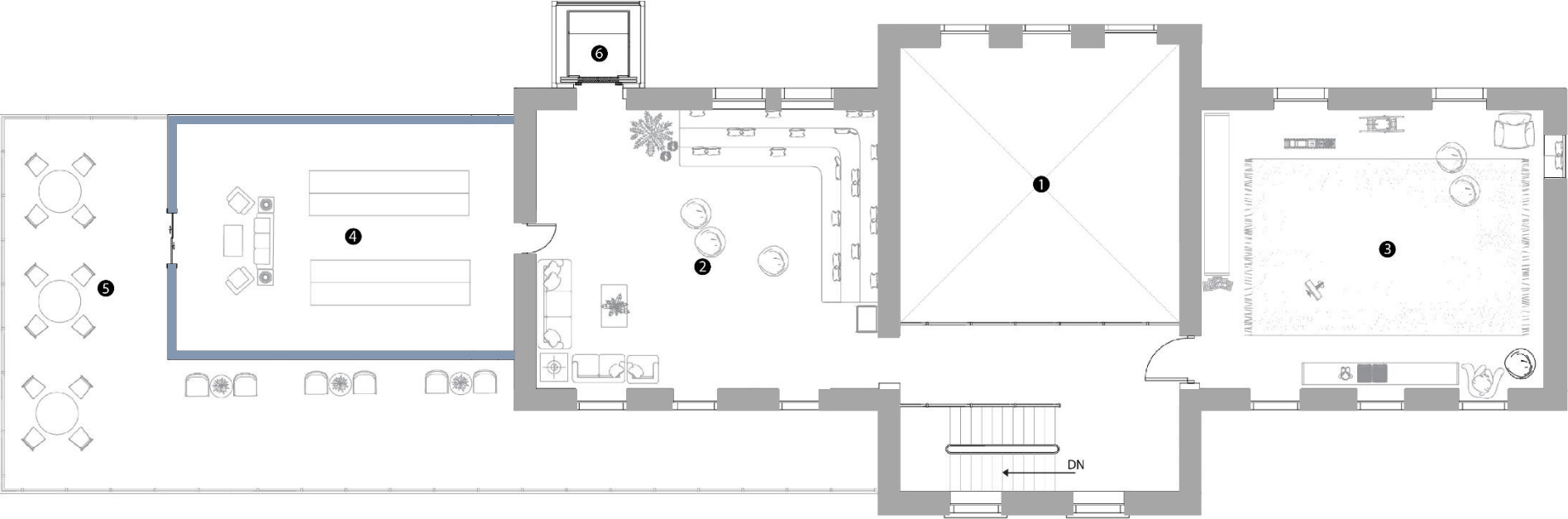


FIRST FLOOR PLAN

Chimlin, Renovation Site

LEGEND

- 1 SEEN BELOW (Exhibition)
- 2 Informal Gathering Space
- 3 Children's Room
- 4 Library / Workshop
- 5 Outdoor Seating / Yoga
- 6 Elevator
- New Addition (Glass Block)



0cm 200cm 300cm



CHILDREN'S PLAYROOM

Chimilin



Cork Flooring

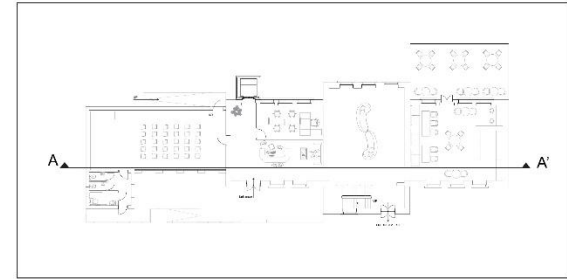
LIBRARY

Chimilin



LONG SECTION

Chimilin (Renovation)



Reference with respect to Plan



SECTION AA'





SITE B (CONSTRUCTION)

Villefontaine



SITE CONTEXT STUDY

Villefontaine



- 🚗 21 min (19 km)
- Railway Line
- Natural Landscape

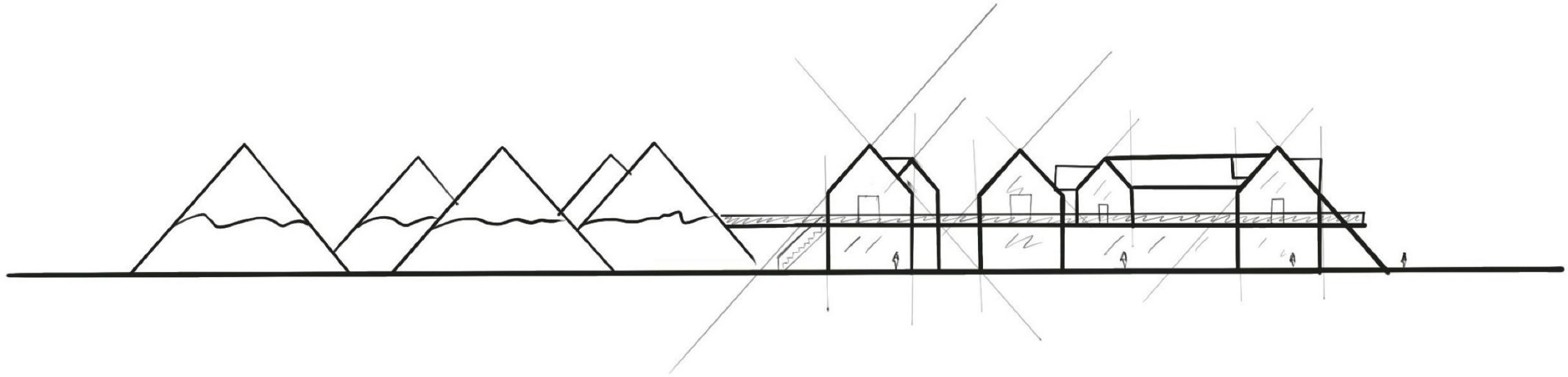


Villefontaine has mostly Villas
Apartments go upto G+3



• Functional, Ordinarily Styled



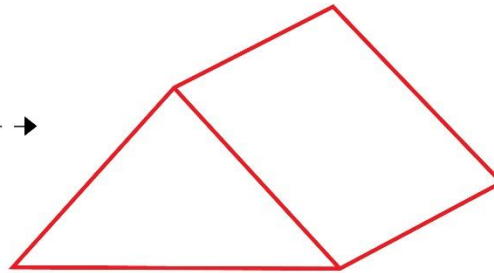
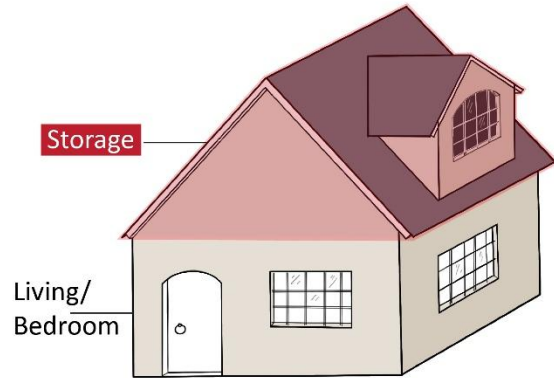


Change in pErSpEcTiVe

We people have always *inherited ideas and informations from our pervious generation*. Inheriting ideas is a good thing, but then why replicate things that already made an identity. Time have changed, sustainability, usability, functionality, all have come into play. **Attic** being 1 of the *prominent feature in France* since old times , is mostly still being used as *storage spaces* to dump things, while these places could actually be used for much more interseting ideas. This brought us to the idea of *change in perspective*.

CONCEPT OF ATTIC

Difference in Thought Process

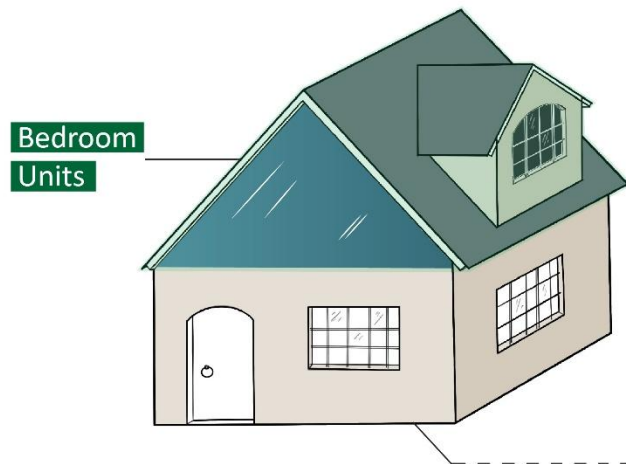


Unused **Negative Sapce**



View Of the Negative Sapce / Store Room

INHERITED THOUGHT PROCESS



Attic Converted
DORMATRIES and BEDROOMS



ENTERTAINMENT / LIVING SPACE

INCREASED STATE OF LIVING USING SAME AREA



Modern



Patterns



Common Site Reference



Busy



Calm



Peaceful



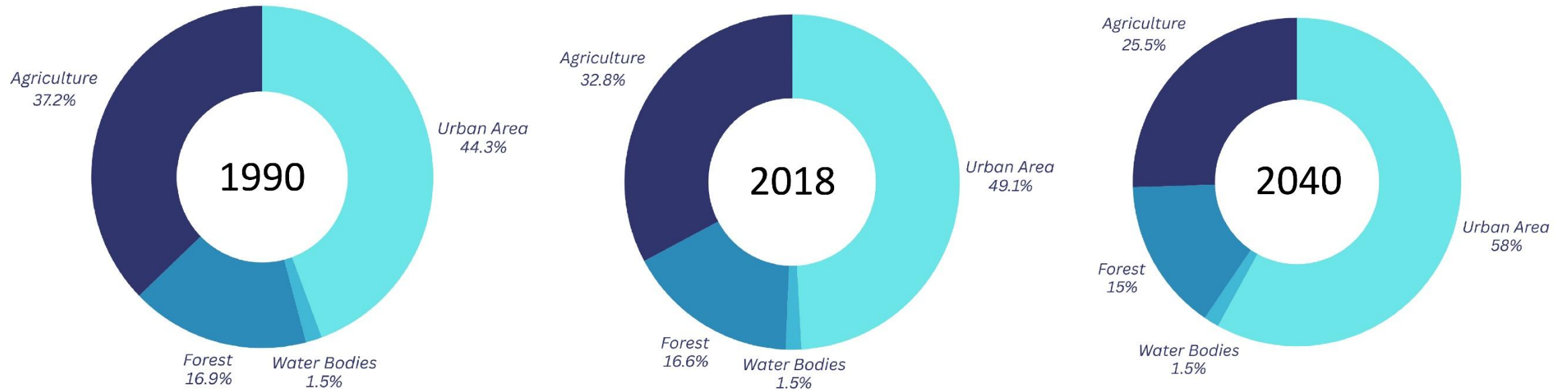
Reference for Our Site



Nature

LAND USE PATTERN

Agriculture (1990-2040)



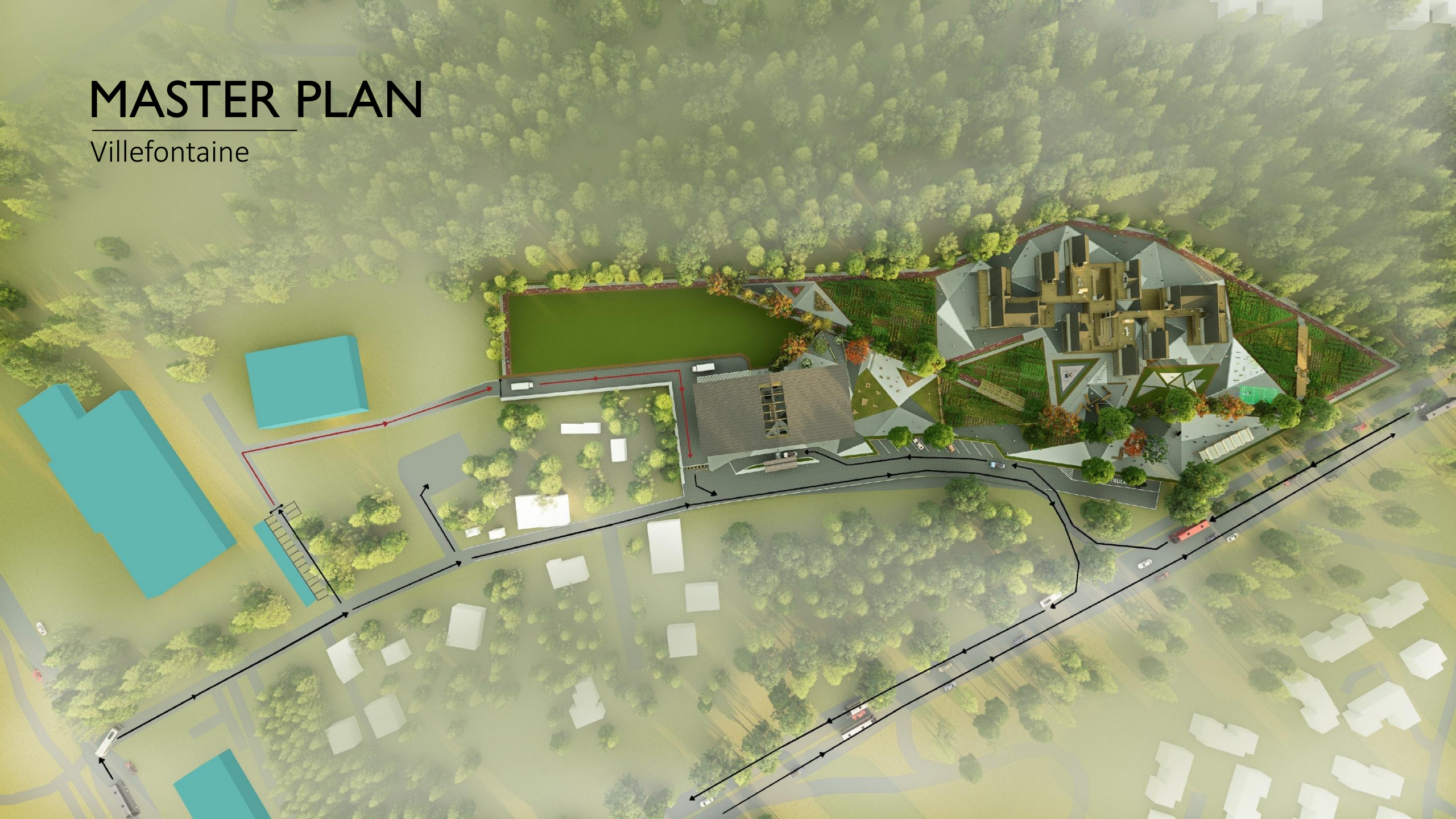
IDENTIFICATION

- Urban Area
- Water Bodies
- Forest
- Agriculture

Significant **loss of Agricultural Space** is observed throughout the years. The rate of depletion might go higher as **Lyon–Turin high-speed railway** system connect through the border of this city. This might lead to **rapid urbanisation**.

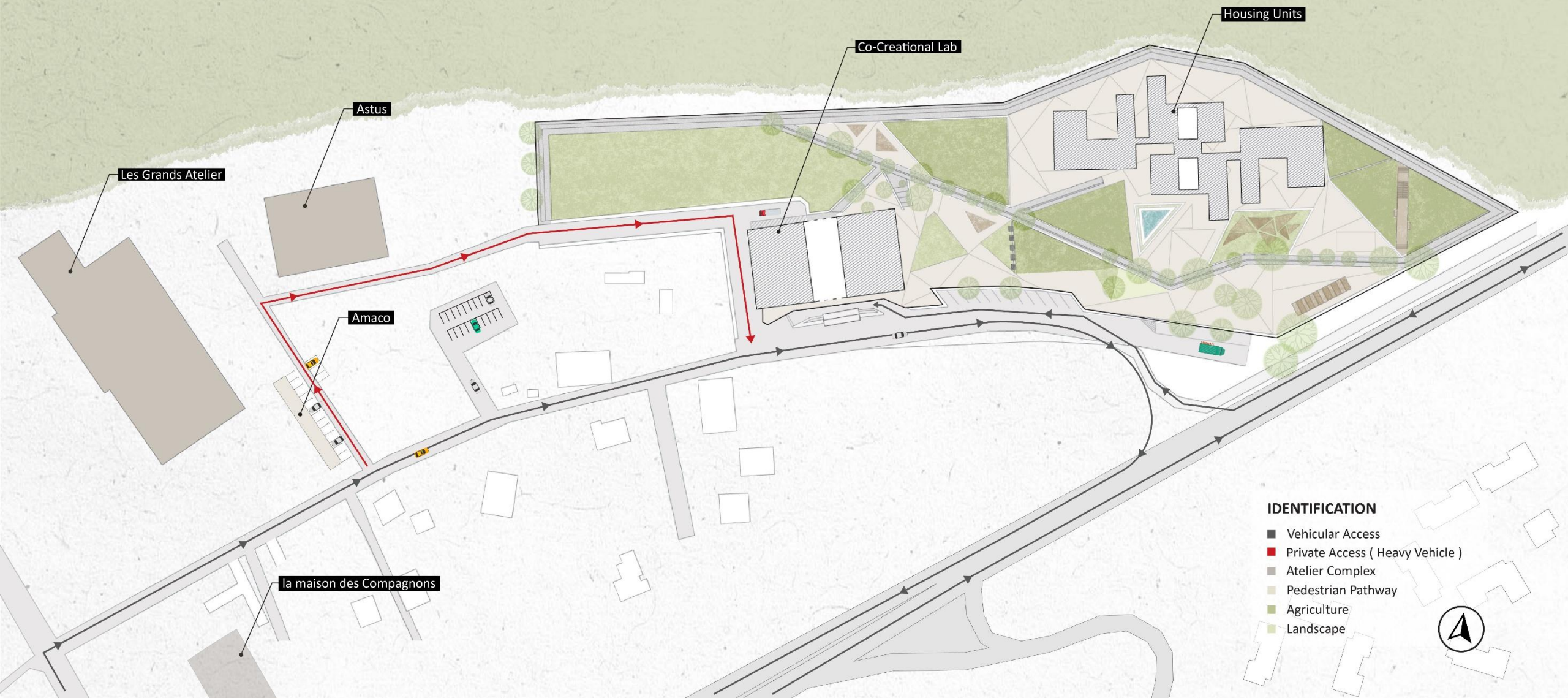
MASTER PLAN

Villefontaine



MASTER PLAN

Villefontaine



Housing Units

Co-Creational Lab

Astus

Les Grands Atelier

Amaco

la maison des Compagnons

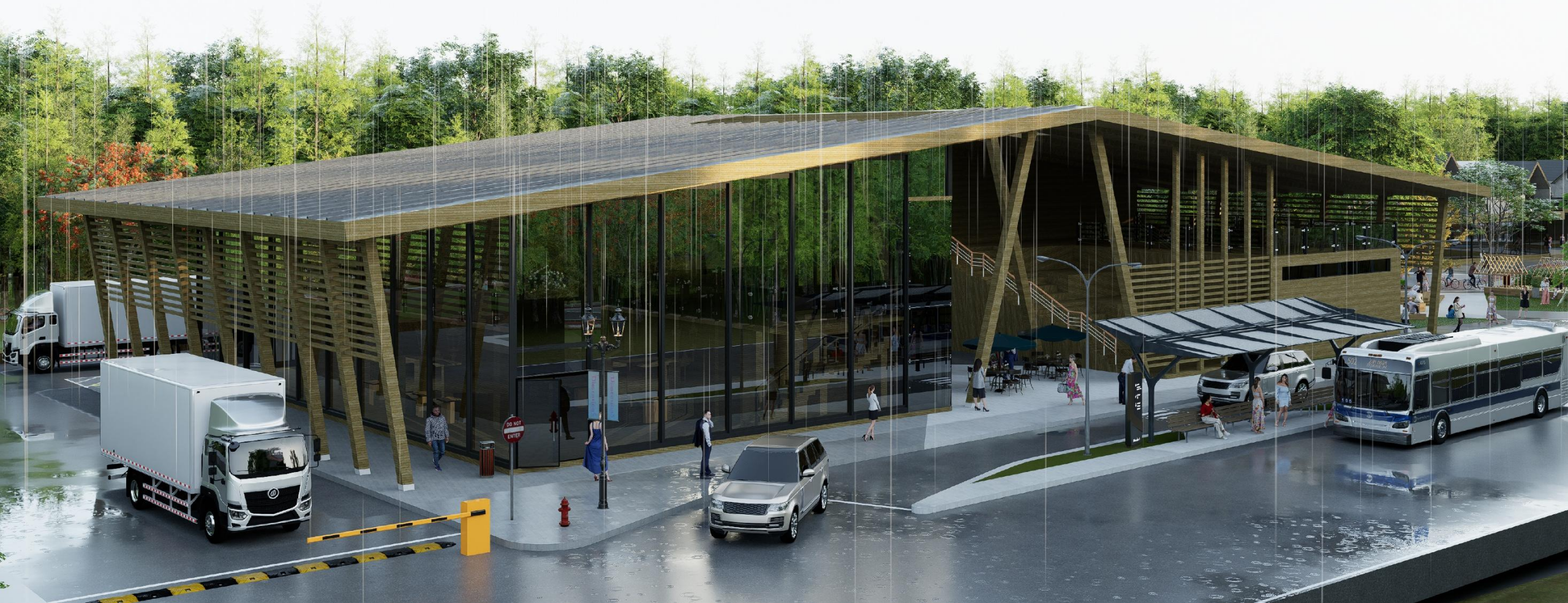
IDENTIFICATION

- Vehicular Access
- Private Access (Heavy Vehicle)
- Atelier Complex
- Pedestrian Pathway
- Agriculture
- Landscape



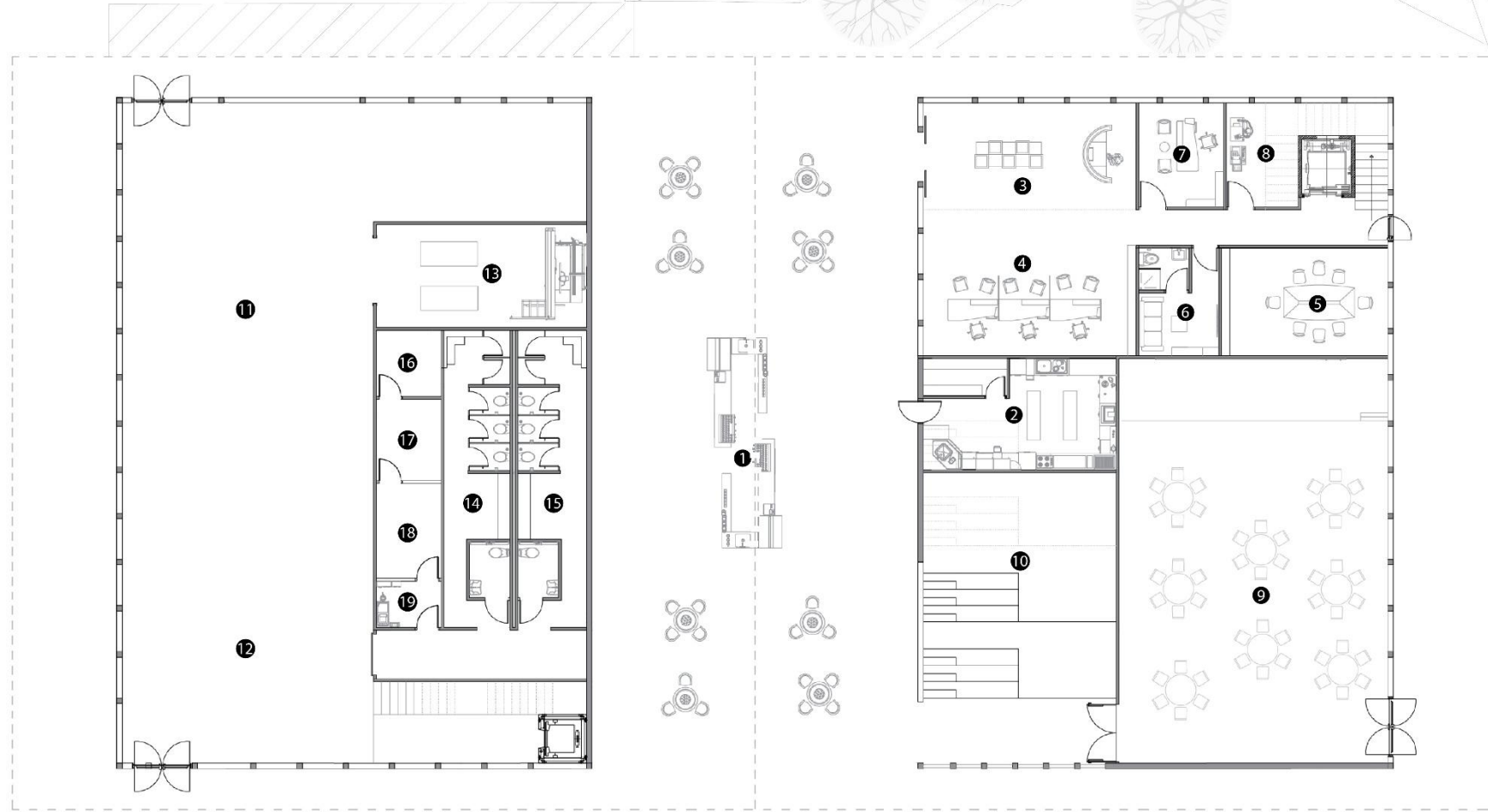
CO- CREATIONAL LAB

Villefontaine



GROUND FLOOR PLAN

Co- Creational Lab



LEGEND

- 1 Restaurant
- 2 Restaurant Kitchen
- 3 Reception
- 4 Administration/ Hostel Booking
- 5 Office Meeting room
- 6 Workers Lounge
- 7 Human Resource Cabin
- 8 Machine/ Printer Room
- 9 Multi Purpose Room
- 10 Informal Seating
- 11 Prototyping Area
- 12 Laboratory
- 13 Wood Cutting Area
- 14 Female Toilet
- 15 Male Toilet
- 16 Server Room
- 17 Security Room
- 18 Worker's Lounge
- 19 Janitor Room



0cm 200cm 300cm

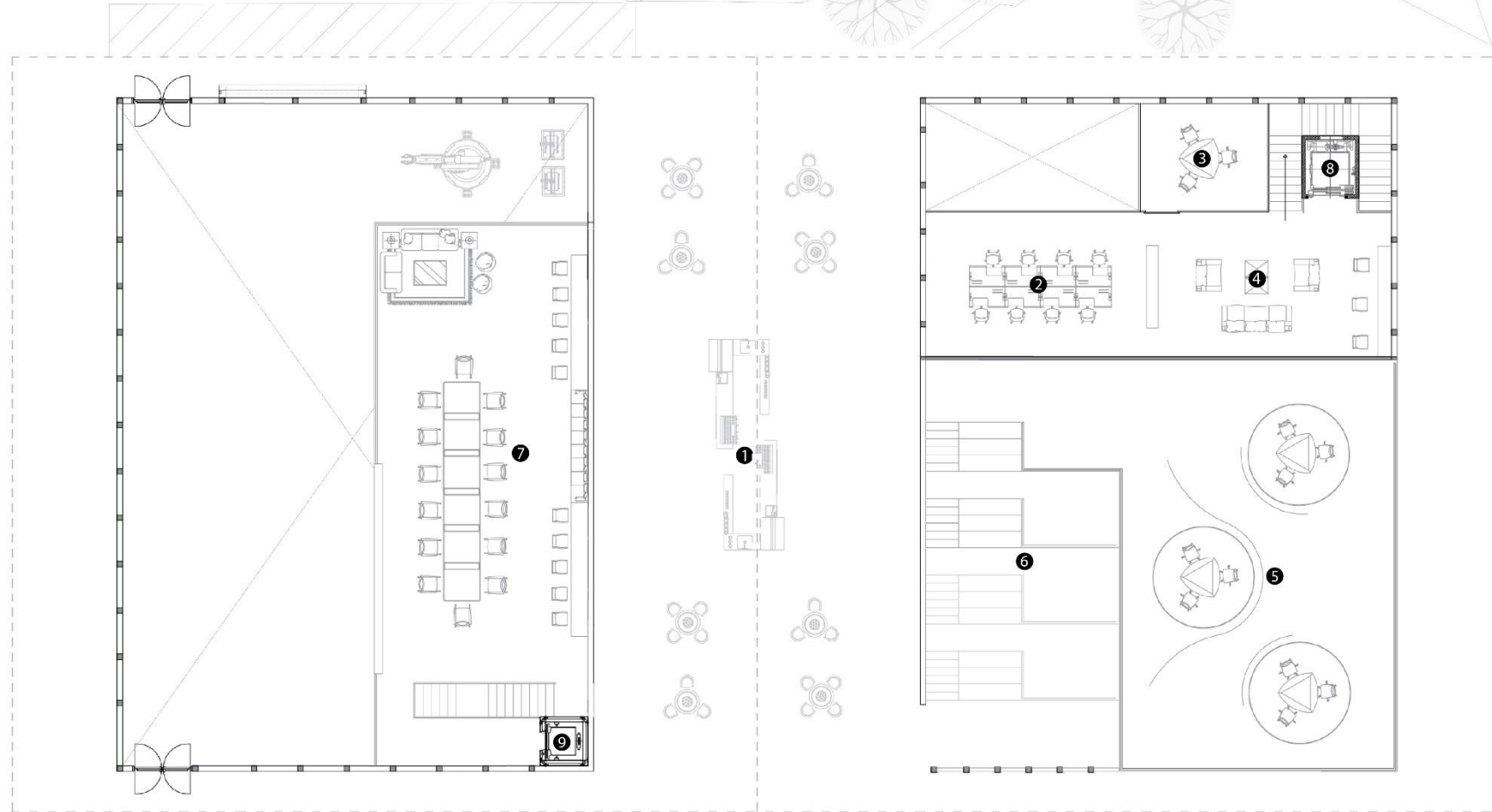
PROTOTYPING AREA

Co-creational Lab



FIRST FLOOR PLAN

Co- Creational Lab (+ 4m)



LEGEND

- 1 Restaurant
- 2 Formal Workspace
- 3 Meeting Room
- 4 Informal Workspace
- 5 Closed Discussion Cabins
- 6 Informal Public Workspace
- 7 Workshop space
- 8 Lift 1 (Office)
- 9 Lift 2 (Co- Creational Lab)



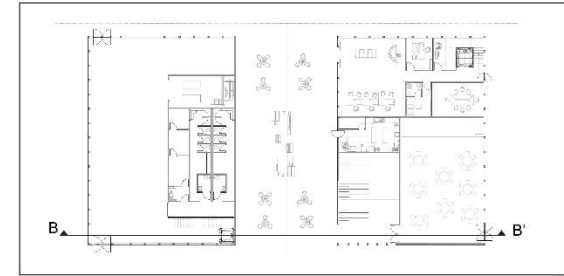
OFFICE SPACE

Co-creational Lab

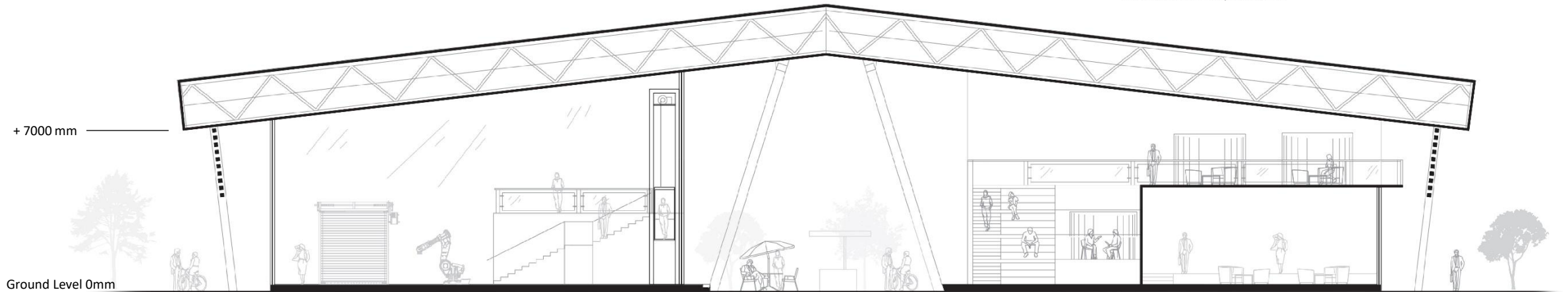


LONG SECTION

Co- Creational Lab (SECTION BB')



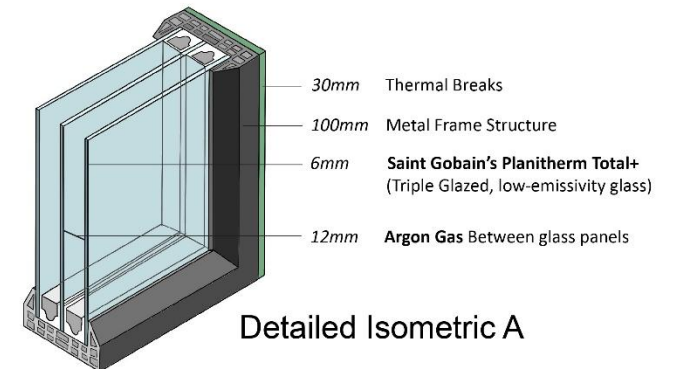
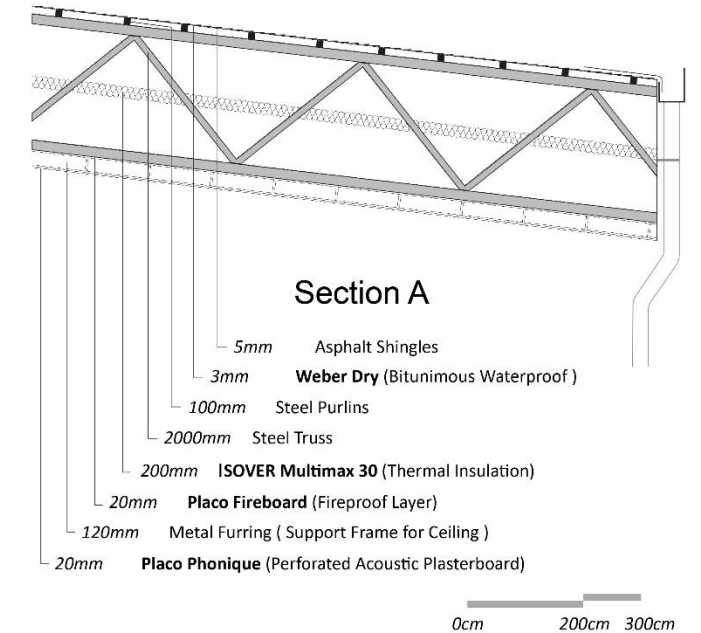
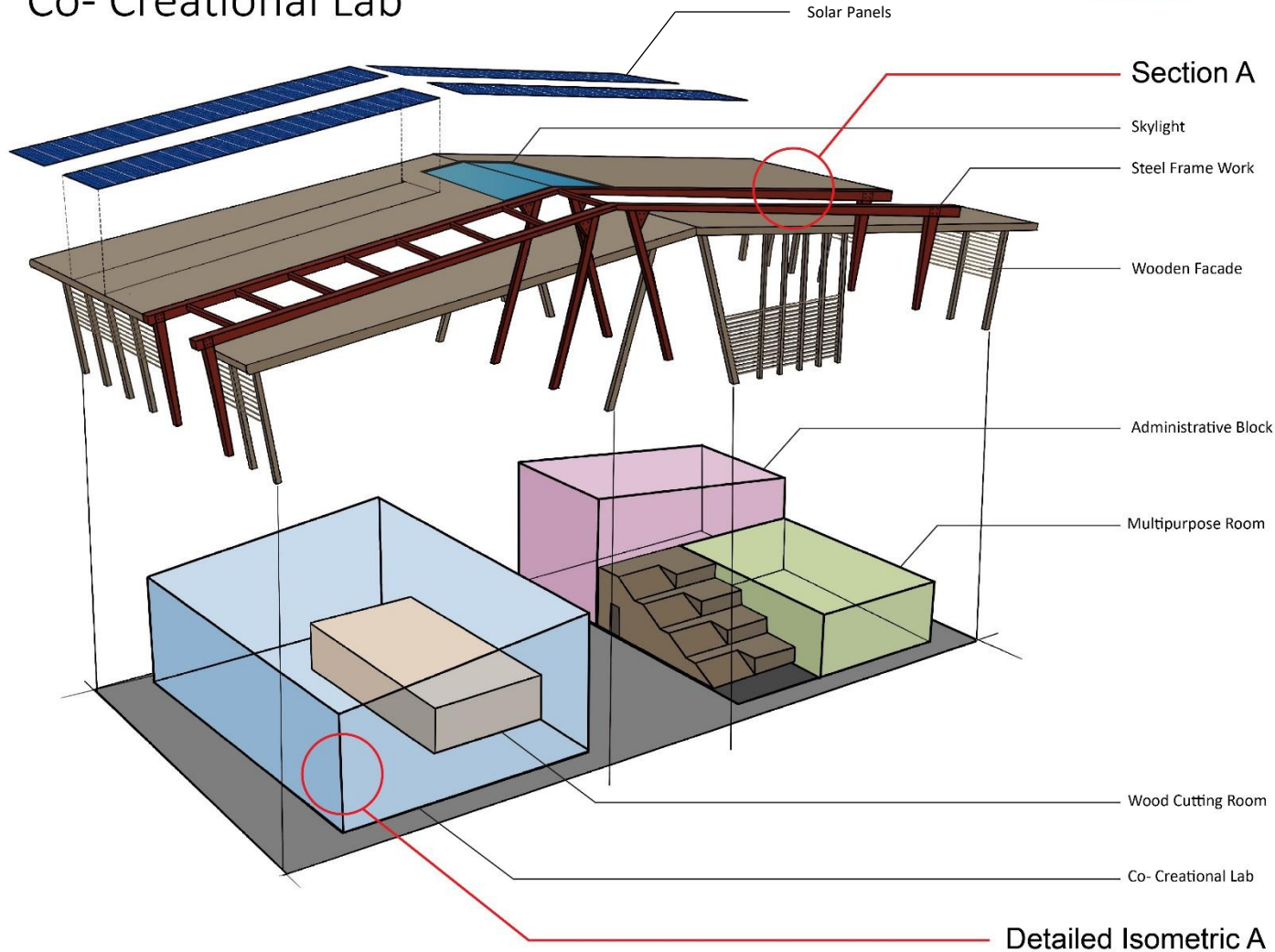
Reference with respect to Plan



SECTION BB'

DETAILED SECTION

Co- Creational Lab





Reused Industrial Wood Box
From Les Grands Ateliers



HOUSING UNIT

Villefontaine



AXONOMETRIC LAYERING

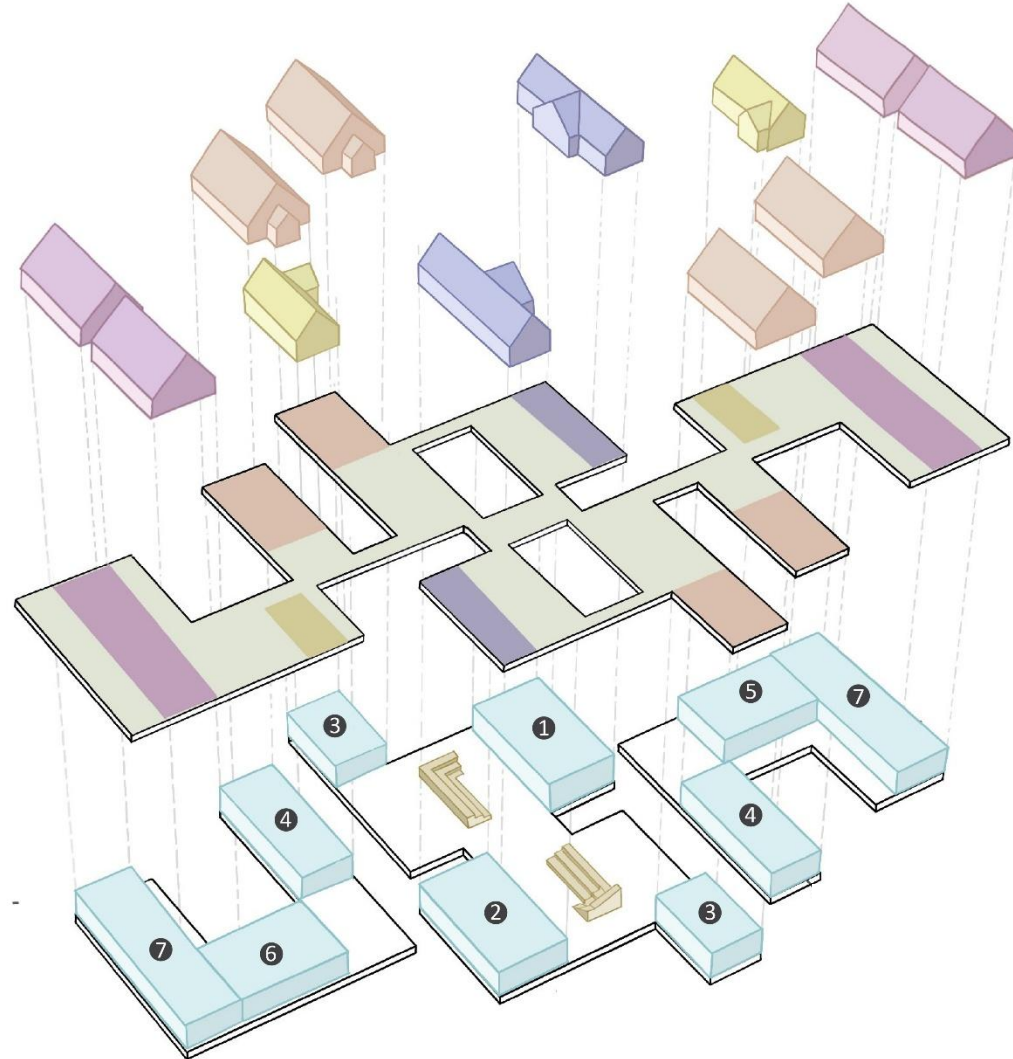
Housing Unit Illustration

Housing Units

- Single Bed
- Double Bed
- 6 Bed Unit
- 8 Bed Unit

Second Floor Slab

Entertainment Zone



LEGEND

- ① Waiting Lounge
- ② Cafe
- ③ Meeting Room
- ④ Closed Workspace
- ⑤ Library
- ⑥ GYM
- ⑦ Entertainment Zone

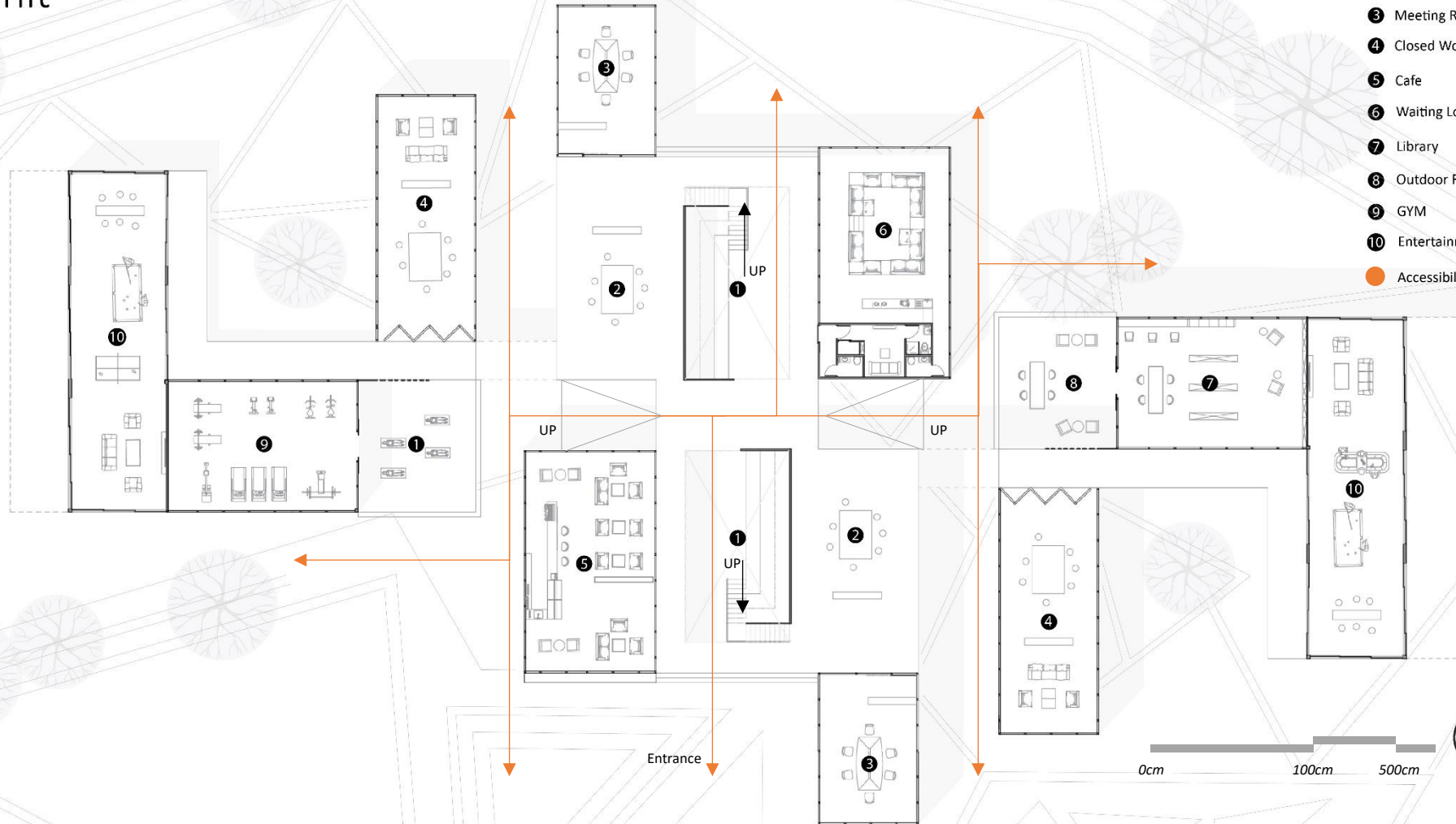


GROUND FLOOR PLAN

Housing Unit

LEGEND

- 1 Lobby
- 2 Open Workspace
- 3 Meeting Room
- 4 Closed Workspace
- 5 Cafe
- 6 Waiting Lounge
- 7 Library
- 8 Outdoor Reading
- 9 GYM
- 10 Entertainment Zone
- Accessibility



WORKSPACE

Housing Unit



CAFE SPACE

Housing Unit



YOGA

Housing Unit



Outdoor Yoga Spot

FIRST FLOOR PLAN

Housing Unit (+ 4m)

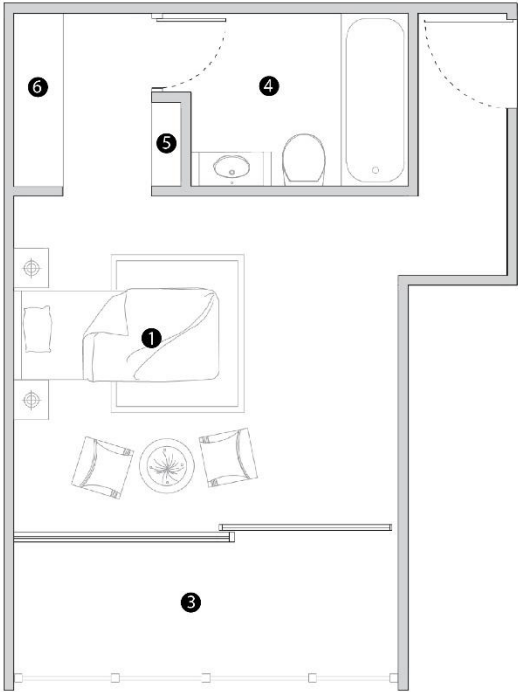
LEGEND

- ① Single Bed Unit
- ② Double Bed Unit
- ③ 8 Bed Unit
- ④ 6 Bed Unit
- ⑤ Communal Kitchen
- ⑥ Gathering Space
- ⑦ Toilet Block

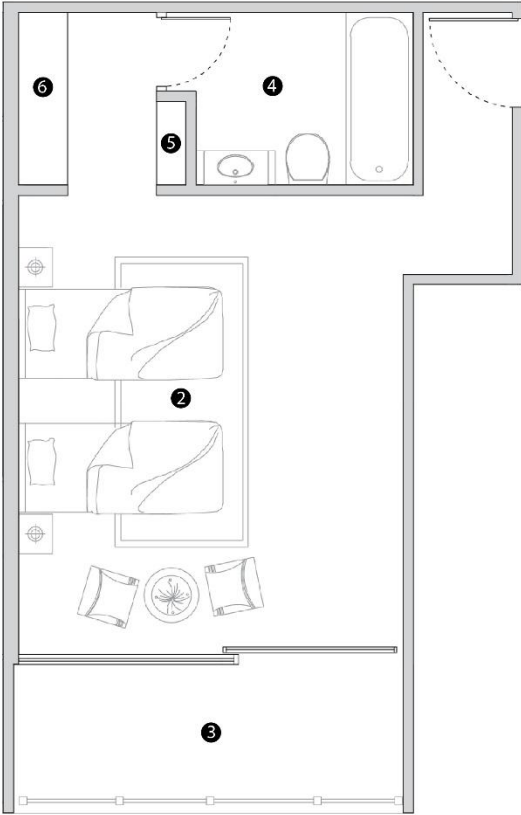


DETAILED PLAN

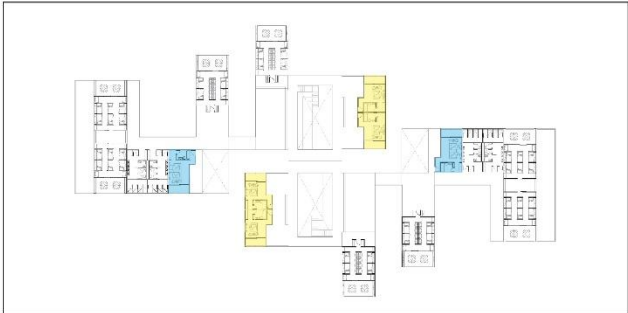
Single and Double Bed Units



SINGLE BED UNIT
Area: 23 m²



DOUBLE BED UNIT
Area: 28 m²



Reference with respect to Plan

LEGEND

- ① Single Bed
- ② Double Bed
- ③ Semi- Outdoor Workspace
- ④ Toilet
- ⑤ Dressing Table
- ⑥ Wardrobe



SINGLE BED

Housing Unit



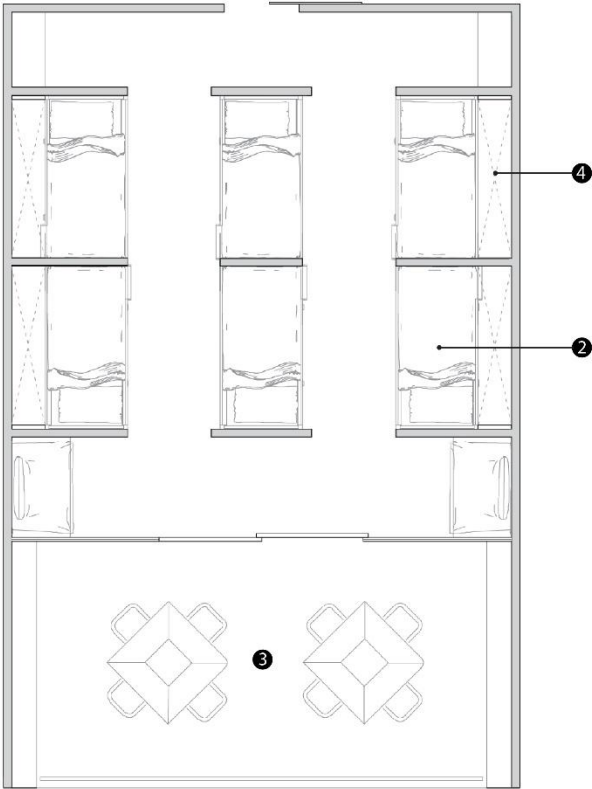
DOUBLE BED

Housing Unit

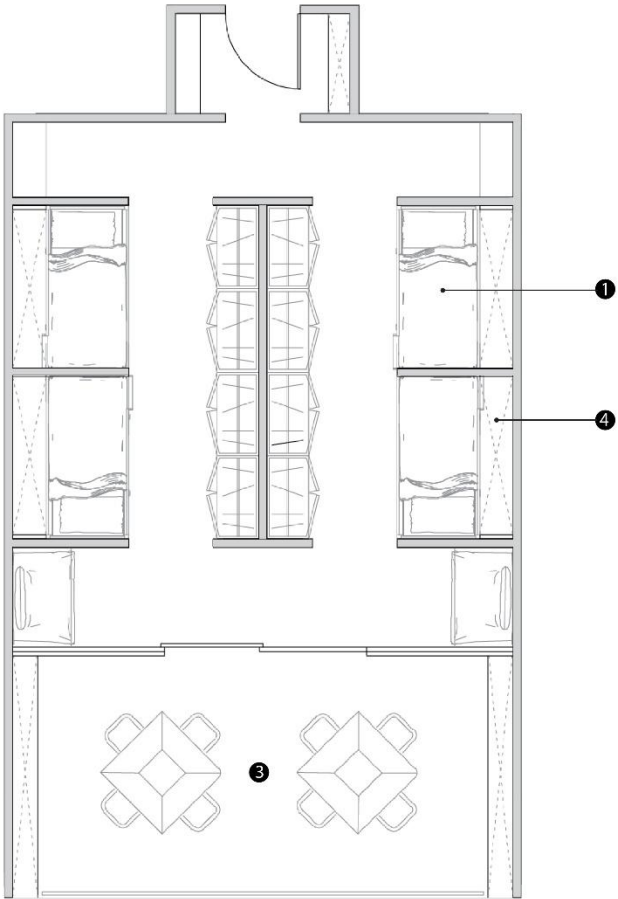


DETAILED PLAN

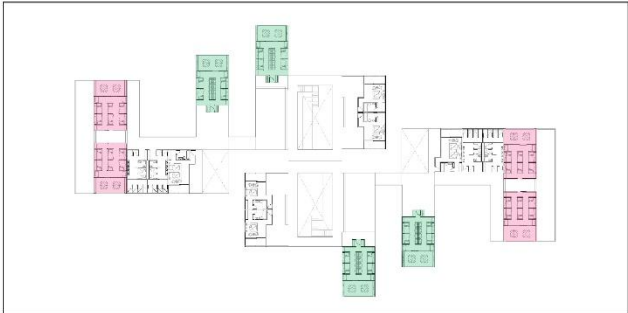
6 and 8 Bed Unit



6 BED UNIT
Area: 38 m²



8 BED UNIT
Area: 38 m²



Reference with respect to Plan

LEGEND

- 1 Bunk Bed Units
- 2 Loft Bed Units
- 3 Semi- Outdoor Workspace
- 4 Inbuilt Bed Shelves

0cm 200cm 300cm



6 BED UNIT

Housing Unit



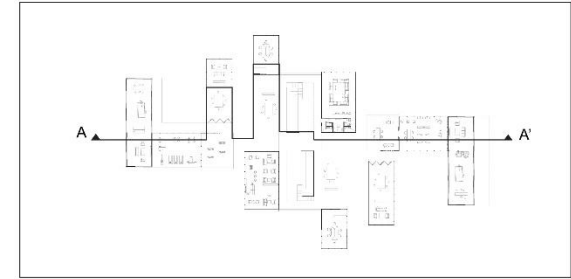
8 BED UNIT

Housing Unit

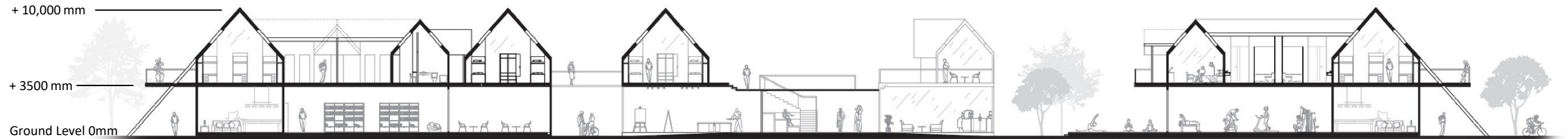


LONG SECTION

Housing Unit (SECTION AA')



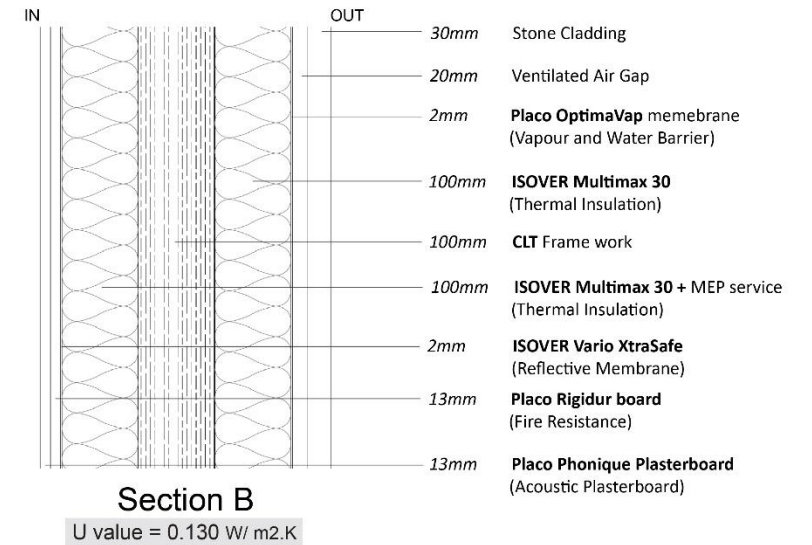
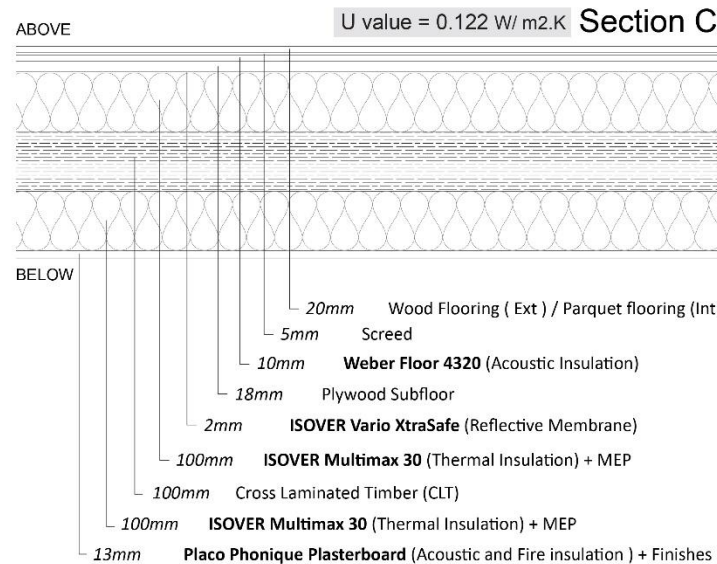
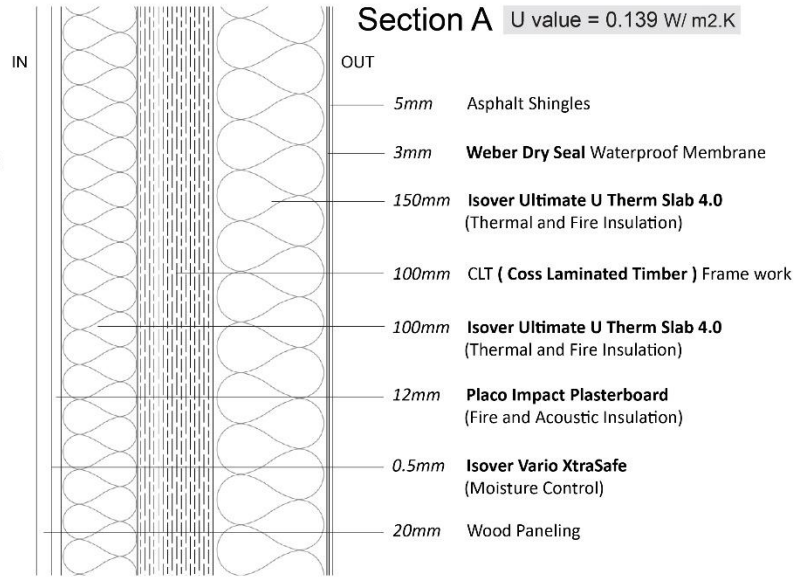
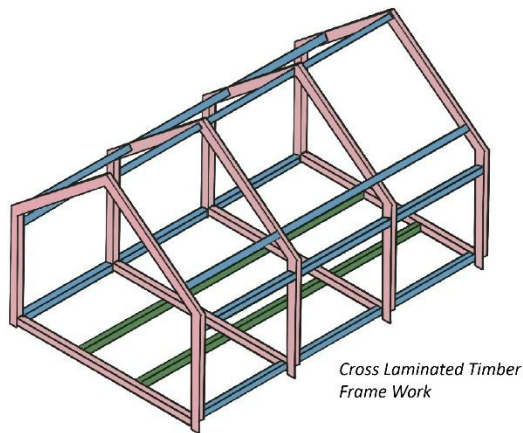
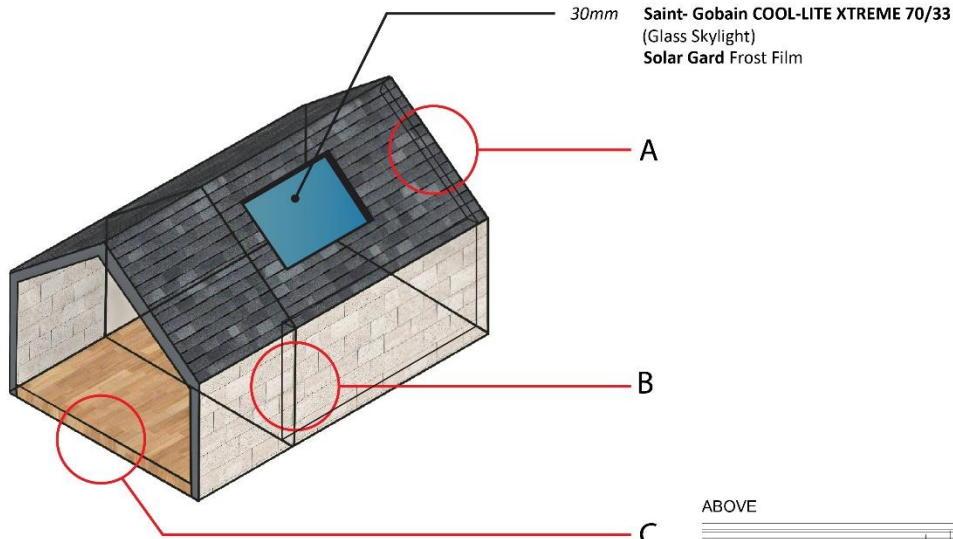
Reference with respect to Plan



SECTION AA'

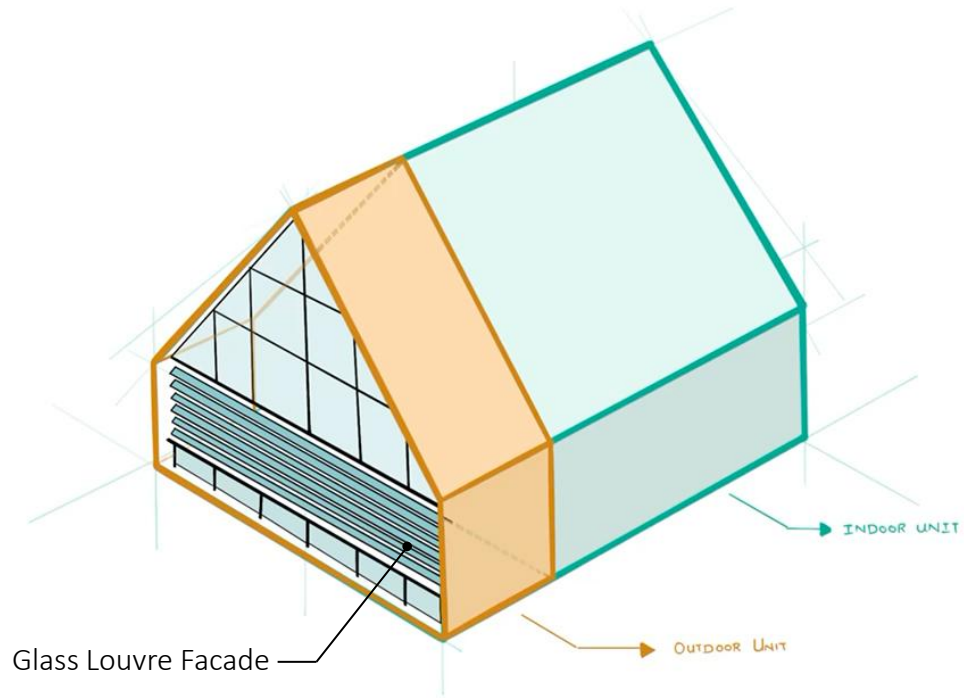
DETAILED SECTION

Housing Unit

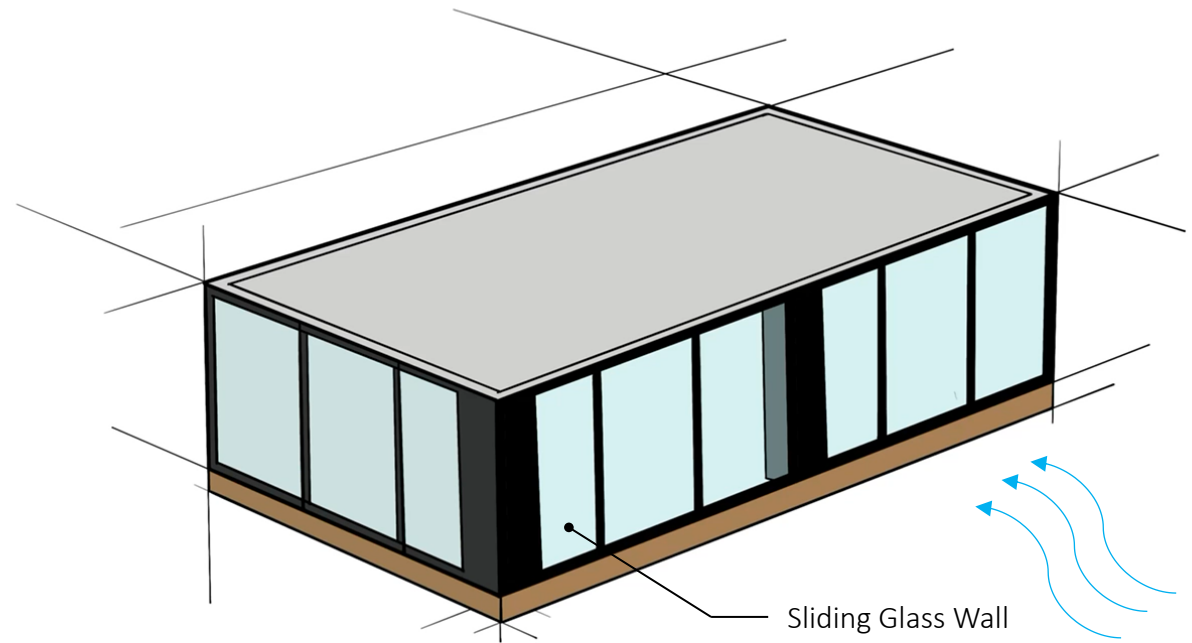


DYNAMIC FACADE

Housing Unit



Balcony Space



Entertainment Space

LANDSCAPE DETAILS



Land For Future Expansion



AGRICULTURE

Viewing Deck



FARMER'S MARKET

Villefontaine





Food Trucks

MULTI COMFORT

Visual, Acoustic, Indoor Air Comfort



Orientation

- The Housing unit is oriented in such a way that there is maximum adequate day light throughout the day. The surrounding landscape provides a scenic beauty through the windows, relaxing residents state of mind and soul.

Glass Facade

- Triangular roofs provide area for large glass windows that would help provide maximum amount of light into the spaces, providing a great visual comfort.
- Triple glazed Saint-Gobain Planitherm Total+ helps in retaining indoor temperature with less mechanical heating.

Achieved U value = 1.0 - 1.1

Works well with RT2012 / RE2020 standards in France

Acoustics

- Natural noise barriers (Trees) are present around and within the site. Helps in blocking noise and provide a peaceful atmosphere within the housing units.
- Within the Structure, Weber Floor 4320 and Placo Phonique Acoustic Plasterboards help reduce the transmittance of impact and airborne noise (18- 22db and 40-50 db respectively) from 1 space to another.

HCL Lighting

- Human Centric Lighting has been used to provide visual comfort in the space throughout the day. This keeps the state of mind healthy and active always.

Workspace Lighting : 750-1,000 lux

Bedroom Lighting : 100- 300 lux

Connectivity and Ventilation

- Glass wall in the entertainment zones are increased greatly to give a feel of connection between outer and inner surrounding, creating more transparency and visual harmony.
- Sliding glass walls provides connection to the surrounding helps in natural air flow and cross ventilation through the building.

MULTI COMFORT

Safety, Humidity, Thermal Comfort



Moisture Control

- **Weber Dry Seal Waterproof Membrane, Isover Vario XtraSafe** and **Placo OptimaVap membrane** are used to control moisture and humidity. In addition ventilation air gap are provided to prevent moisture retention, which would cause the structural material to damage overtime.

Materials

- **CLT (Cross Laminated Timber)** is the primary element used in these modular units. It is strong enough and has a **good thermal mass**, which internally helps provide **better thermal insulation** and is more **sustainable** as wood is abundant in France.
- **Wood** being another important element in finishes, provide better **thermal insulation** and aesthetics, providing a great **Visual Comfort**.
- **Stone** has **high thermal mass**, which stores daytime heat (sun or internal gains) and releases it slowly at night. Helps stabilize indoor temperatures. Its is sustainable as it is locally sourced, **no maintenance required**, reduce need for mechanical heating.

Insulation

- Villefontaine has a temperature of 0-10 degree during winters and 15- 28 degree during summers. Housing Units are highly insulated to provide a healthy room temperature inside even in this extreme condition.
- **Isover Ultimate U Therm Slab 4.0** and **ISOVER Multimax 30** helps to reduce the heat or cold transmittance into and out of the indoor environment.
- **Achieves Passivhaus Standards of France.**

Most of the materials used are A+ graded according to France VOC Standards

- **ROOF** (U value = 0.139 W/ m2.K)
- **FLOOR** (U value = 0.122 W/ m2.K)
- **WALLS** (U value = 0.130 W/ m2.K)

Fire and Safety

- Snow is a concern in this region. **Triangular roof** helps in **drainage** of snow and rain, preventing it from accumulation, which may affect the insulation, moisture and structural integrity of the structure.

Isover Ultimate U Therm Slab 4.0(Can withstand >1,000°C), **Placo Rigidur board** and **Placo Phonique Plasterboards** are used to provide Fire resistance for **over 60- 90min** at very high temperatures.

Can withstand >1,000°C
Fire resistance for over 60- 90min

MULTI COMFORT

Safety, Humidity, Thermal Comfort



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Fire and Safety

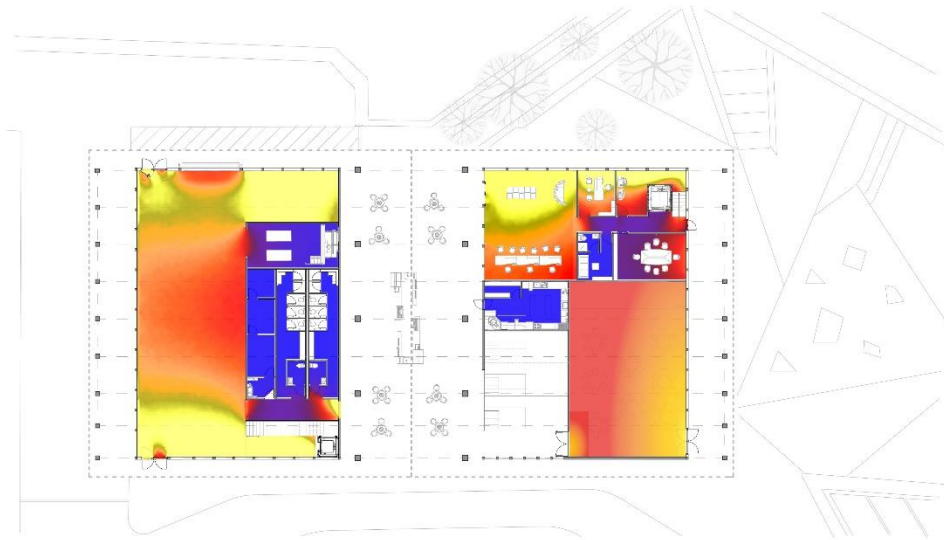
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Can withstand >1,000°C
Fire resistance for over 60- 90min

DAY LIGHT FACTOR

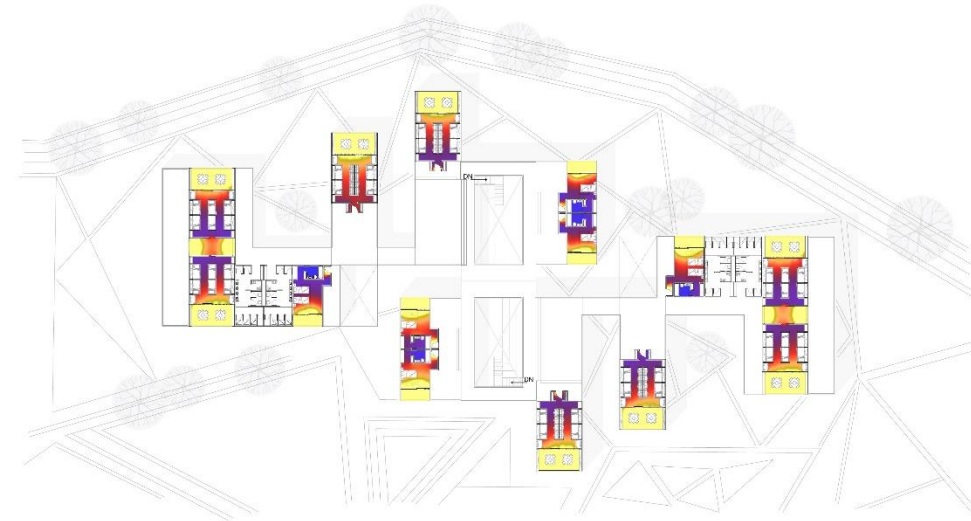
Day Light Study



Co-Creational Lab

Workspace receive DF 4 - 8 %

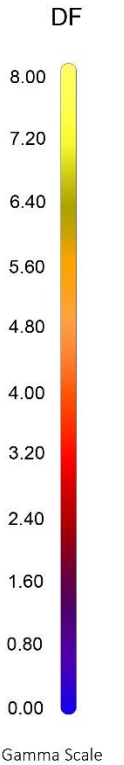
The site design and orientation has been set in such a way that maximum light enters the prototyping and office spaces. This increase the overall human activeness during the day, making tasks more productive. Reduces the need for artificial light during the day



Housing Unit Study

Workspace receive DF 4 - 8 %
Bed space receive DF 1- 4 %

In the Housing unit, adequate light is obtained during the day. Extended balcony shade and optional facade system helps to bring in diffused light into the space while protecting the workspace from cold winds. Semi open workspace is naturally lit with controlled flow to natural air, providing a more calm and quiet place for people to work peacefully.



U - VALUE CALCULATIONS

For Housing Unit

U-R-value calculator

Assembly ID:01ud Assembly name: **00_floor** Internal insulation?:

Heat transfer resistance, inner surface: **0.17** (m²-K/W) Additional U-value: **0.00** (W/m²-K)

Heat transfer resistance, outer surface: **0.00** (m²-K/W)

Layer	Area section 1	Conductivity, lambda (W/m-K)	Area section 2 (optional)	Conductivity, lambda (W/m-K)	Area section 3 (optional)	Conductivity, lambda (W/m-K)	Thickness (mm)
1	wood flooring	0.130					10.0
2	screed	1.500					5.0
3	webber floor	1.200					10.0
4	plywood subfloor	0.130					18.0
5	isover multimax	0.030					200.0
6							
7							
8							

Surface percentage 1:100.00 Surface percentage 2: **0.00** Surface percentage 3: **0.00**

Thickness:0.2(m) U-value:**0.142(W/m²-K)** R-value:**7.06(m²-K/W)** Error %:0.00

For Ground Floor Flooring

U-R-value calculator

Assembly ID:03ud Assembly name: **02_walls** Internal insulation?:

Heat transfer resistance, inner surface: **0.13** (m²-K/W) Additional U-value: **0.00** (W/m²-K)

Heat transfer resistance, outer surface: **0.04** (m²-K/W)

Layer	Area section 1	Conductivity, lambda (W/m-K)	Area section 2 (optional)	Conductivity, lambda (W/m-K)	Area section 3 (optional)	Conductivity, lambda (W/m-K)	Thickness (mm)
1	isover multimax 30	0.030					200.0
2	CLT	0.170					100.0
3	MEP service gap	0.250					40.0
4	placo rigidus board	0.250					13.0
5	placo phonique plasterboard	0.250					13.0
6							
7							
8							

Surface percentage 1:100.00 Surface percentage 2: **0.00** Surface percentage 3: **0.00**

Thickness:0.4(m) U-value:**0.130(W/m²-K)** R-value:**7.69(m²-K/W)** Error %:0.00

Assemblies (user-calculated)

For Walls

U-R-value calculator

Assembly ID:02ud Assembly name: **01_roof** Internal insulation?:

Heat transfer resistance, inner surface: **0.10** (m²-K/W) Additional U-value: **0.00** (W/m²-K)

Heat transfer resistance, outer surface: **0.04** (m²-K/W)

Layer	Area section 1	Conductivity, lambda (W/m-K)	Area section 2 (optional)	Conductivity, lambda (W/m-K)	Area section 3 (optional)	Conductivity, lambda (W/m-K)	Thickness (mm)
1	wood paneling	0.130					20.0
2	Placo impact plasterboard	0.250					12.0
3	isover Ultimate U therm slab 4.0	0.040					100.0
4	CLT	0.170					100.0
5	isover Ultimate U therm slab 4.0	0.040					150.0
6							
7							
8							

Surface percentage 1:100.00 Surface percentage 2: **0.00** Surface percentage 3: **0.00**

Thickness:0.4(m) U-value:**0.139(W/m²-K)** R-value:**7.18(m²-K/W)** Error %:0.00

For Roof

U-R-value calculator

Assembly ID:04ud Assembly name: **03_Floor of second floor** Internal insulation?:

Heat transfer resistance, inner surface: **0.17** (m²-K/W) Additional U-value: **0.00** (W/m²-K)

Heat transfer resistance, outer surface: **0.04** (m²-K/W)

Layer	Area section 1	Conductivity, lambda (W/m-K)	Area section 2 (optional)	Conductivity, lambda (W/m-K)	Area section 3 (optional)	Conductivity, lambda (W/m-K)	Thickness (mm)
1	wood flooring	0.130					20.0
2	screed	1.500					5.0
3	webber floor 4320	1.200					10.0
4	plywood subfloor	0.130					18.0
5	MEP service gap	0.250					100.0
6	isover multimax 30	0.030					200.0
7	CLT	0.170					100.0
8							

Surface percentage 1:100.00 Surface percentage 2: **0.00** Surface percentage 3: **0.00**

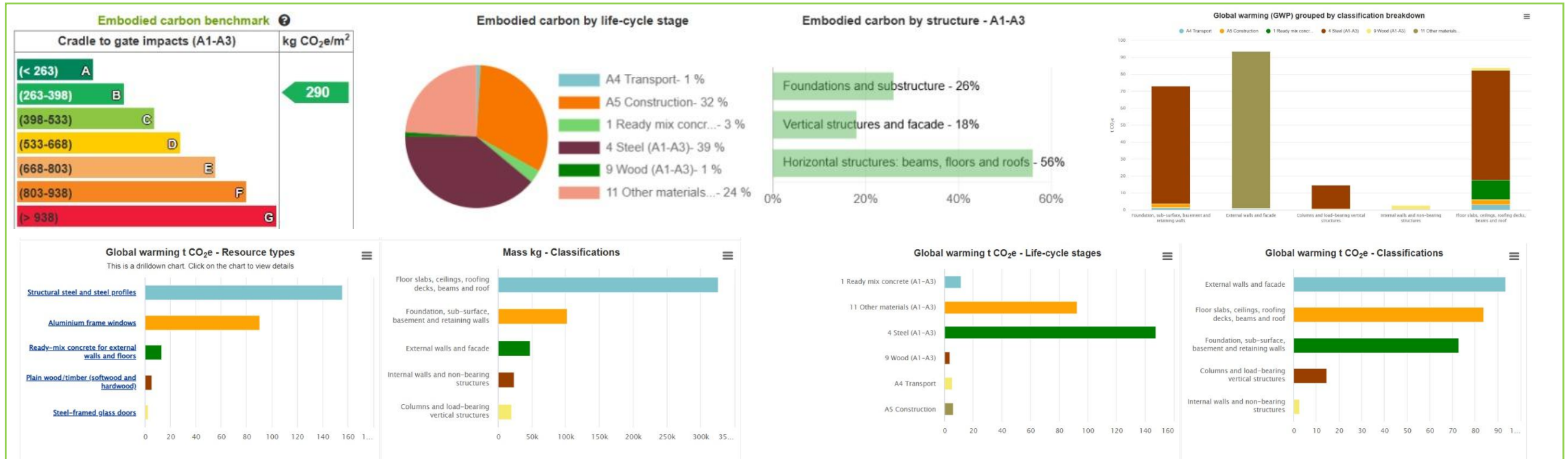
Thickness:0.5(m) U-value:**0.122(W/m²-K)** R-value:**8.17(m²-K/W)** Error %:0.00

For First Floor Flooring

LIFE CYCLE ASSESSMENT

One-Click LCA

Report For Co-Creational Lab



Report For Housing Unit

