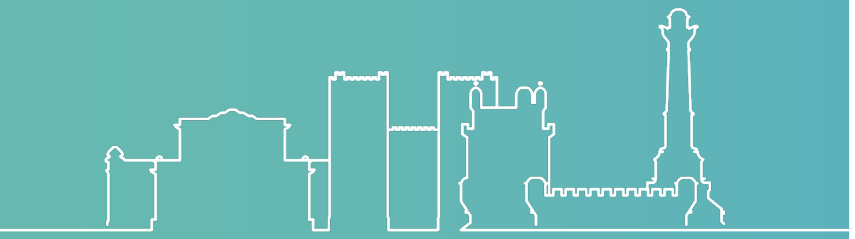


ARCHITECTURE STUDENT CONTEST

Lisbon 2023

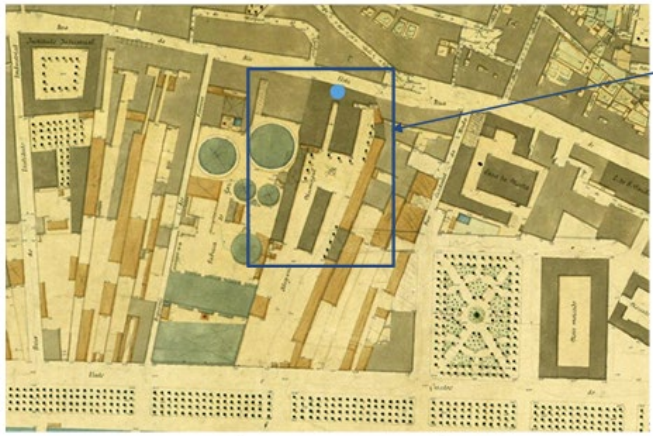
SAINT-GOBAIN

CONEXÃO

CONEXAO is a Portugese word for „connection“. This project is where the past meets the present to create a coherent and sustainable link. With this project I create connection between old architecture and new, between analog and digital, to develop small culture centres that improves people habits of thinking, creativity and artistic enjoyment.
The purpose is of connection is to make two different buildings work as as one, while also combining cultural and residential functions, creating additional community spaces.
The external area whitch sourounds buildings is made as variable as possible, using water, terrain intersections and a variety of green spaces with pedestrian paths that allows free movement throughout the site, to experiance all created spaces.

HISTORICAL BACKGROUND

The plot is included in an area named Aterro da Boavista Nascente (East Boavista Landfill), which is included in the area of the “Big Landfill” from Boavista Street to the south extending until the river bank, whose construction began in 1855 with the intention of “sanitizing” a dirty and degraded industrial area, made up of a succession of small ravines and private landfills that served the small industries that were growing in a disorganized manner.
The land lots are very long and narrow, extending from Boavista street almost to the river, a structure that was originated in the old “boqueirões”, river penetrations perpendicular to the bank that flooded on the high tide, and served as boat access to the industries and warehouses implanted there, essentially linked to the riverside activity.



Urban Plan of Aterro da Boavista dating from 1878

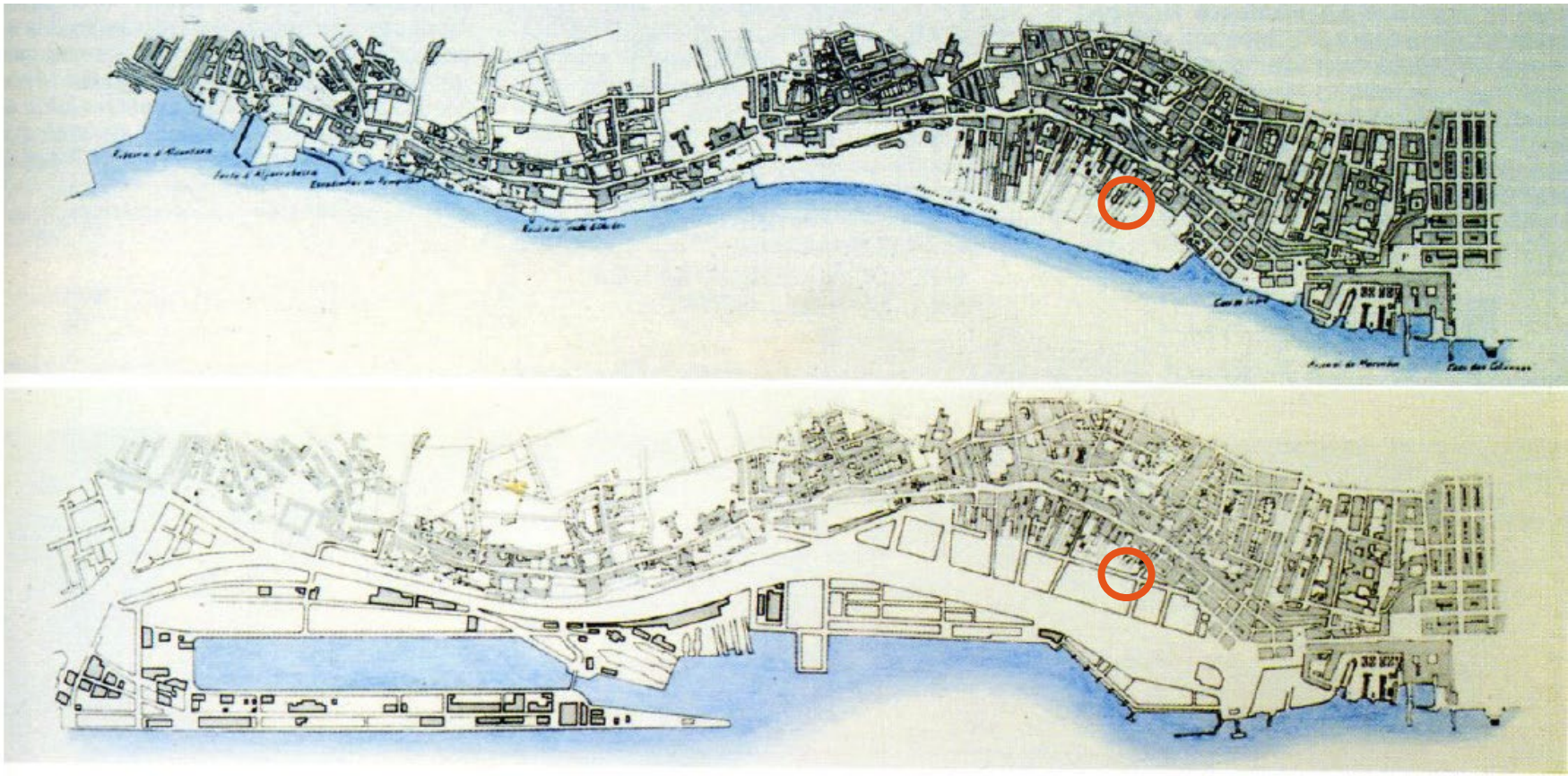
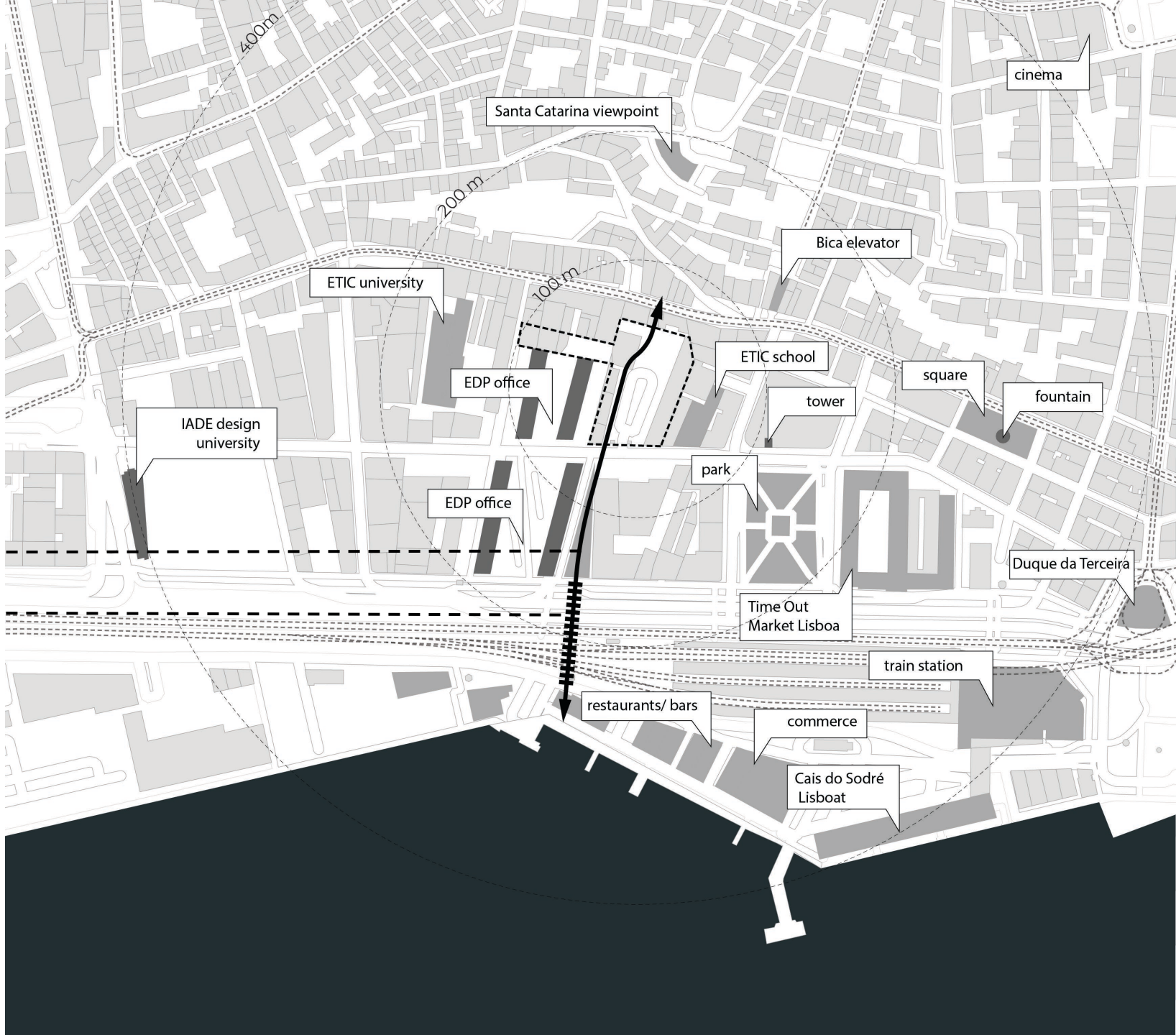


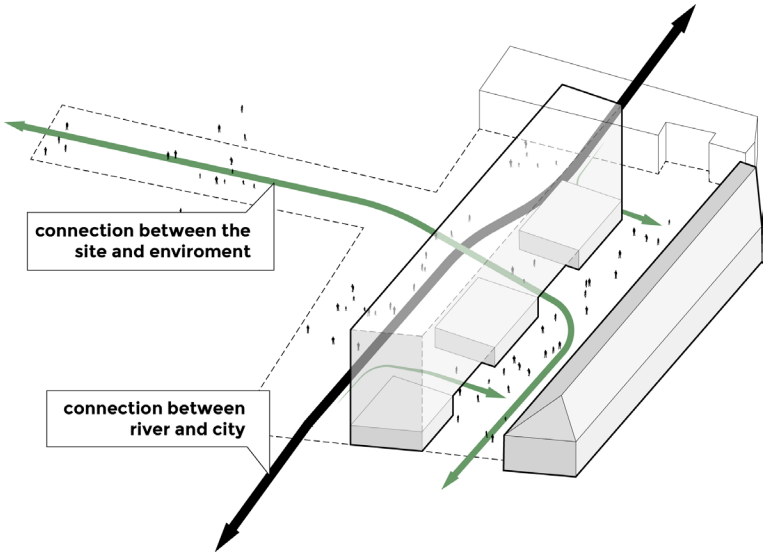
Figure 3 Plans comparing the coast line in 1871 and 1911, from Alcântara to Cais Sodre. Source: “Arquitectura” nº137,1980, P.29

SITE ANALYSIS

Today, the neighbourhood is rapidly chainging. Old buildings are being demolished or regenerated with new functions and designs in order to create a better regeneration of urban fabric. In this area there are already three universities and two big office buildings that attracts more people of all ages and professions.
In detail plan it is proposed to maintain elongated character of the buildings that protrude towards the river, thus preserving the visual permabiltity of the Santa Catarina hill and the river while allowing pedestrians to move around and enjoy the spaces that open up between the buildings. There is also a solution to improve connection to the riverside by planning a pedestrian bridge, which axis and pedestrian path connets with planned site.

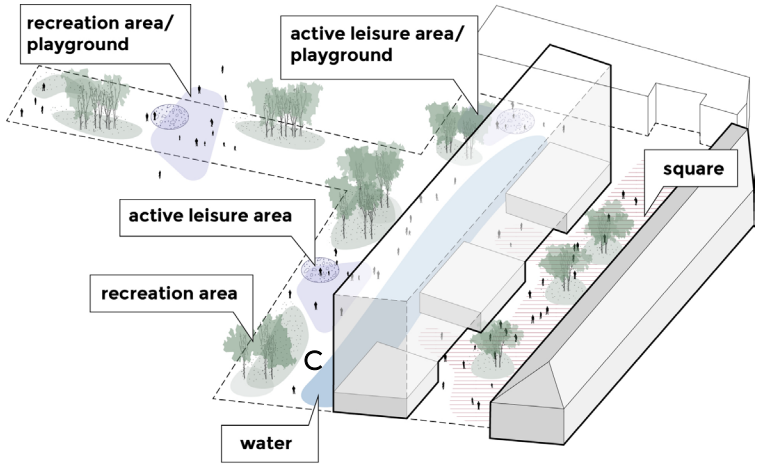


TERRITORY ANALYSIS



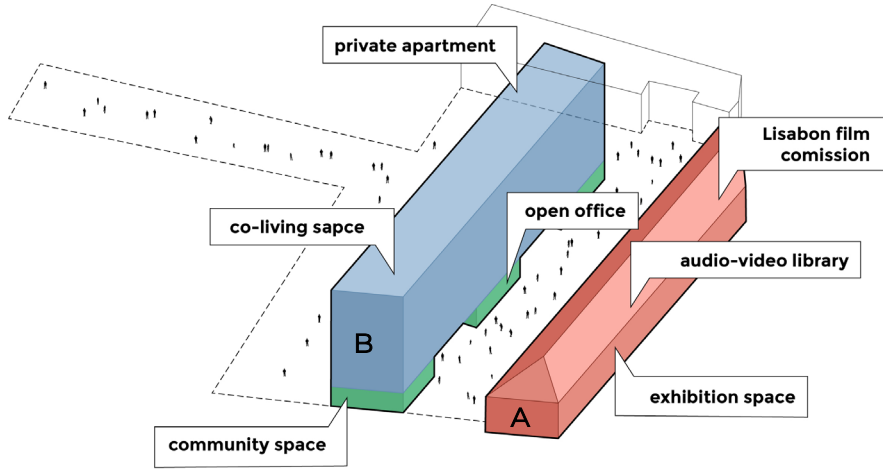
CONNECTION SHEME

The axis of the bridge and the building's bromide connection with the RUA DA BOAVISTA street dictates the direction of the pedestrian path - river - city. Adapting to the unique shape of the site, new connection between the site and enviroment is created. The ground plan development of the detailed plan ensures the internal permeability of the territory for all people.



SITE FUNCTIONAL SCHEME

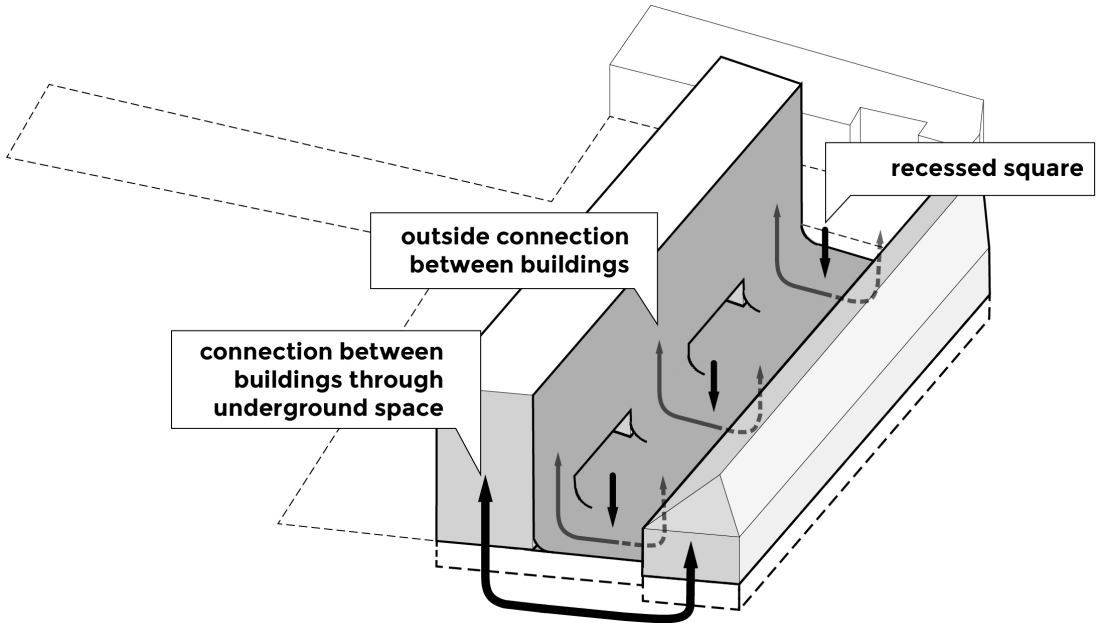
Analysing the intrinsic function of the site and its values, I propose to create a stretch of water between the building and the main pedestrian walkway, which could remind us of old “boqueirões”, river penetrations, that was there in the past. Public spaces for active and passive recreation are created next to the pedestrian path, and a public square connects the existing and new buildings.



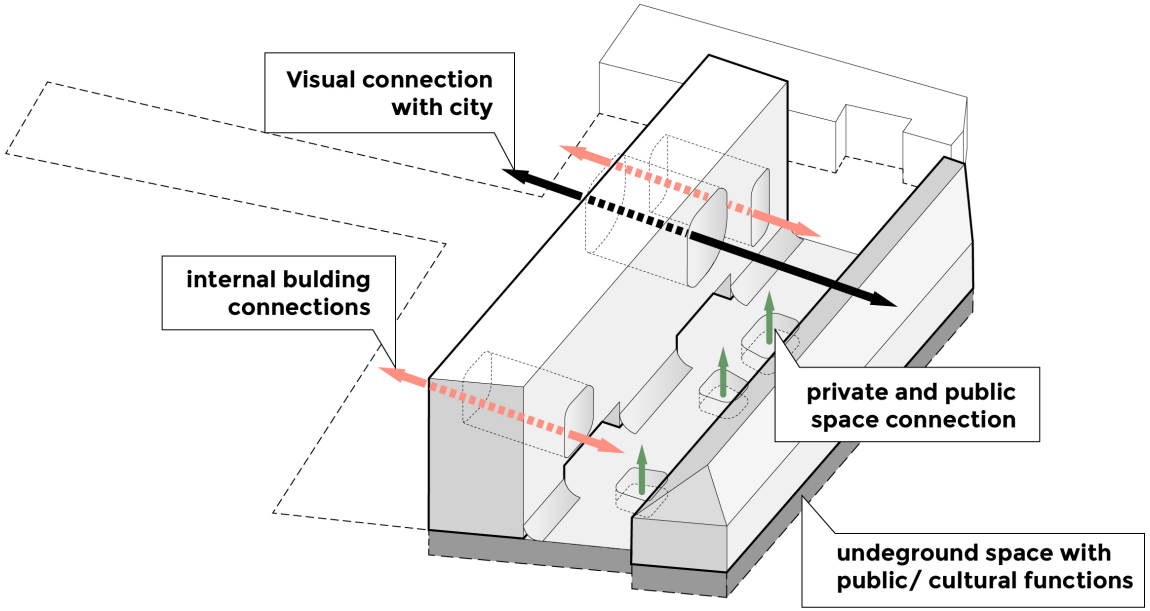
BUILDINGS FUNCTIONAL SCHEME

In these buildings there will be two different functions – public and residential, which will ensure the functionality of the site at all time.

CONCEPT



The architectural expression and idea aims to draw attention to the connections between old and new architecture, between public and private spaces, between the city and the people. The connection between the buildings is expressed through a recessed square that flows into the facade of the new building and connects to the old one from below. The buildings are also connected through underground space.



Underground space is not for parking but for public, cultural function to encourage people for more sustainable mobility, and to improve connection between culture and people.
Three main cavities of unequal size have been made to create visual connections to the city.

SECTION 1-1

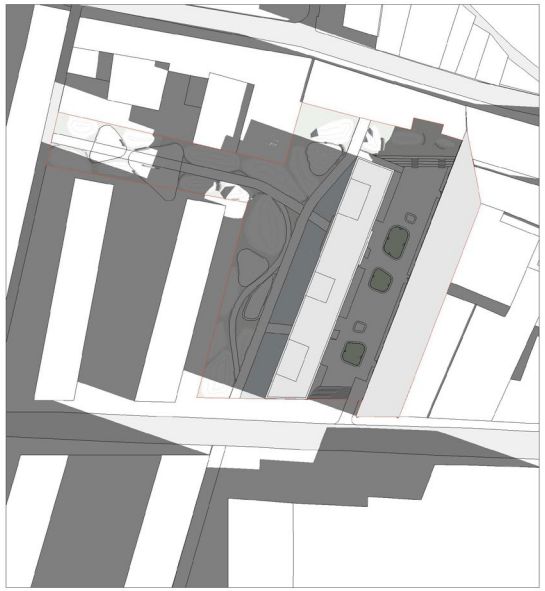

private apartments
private apartments
private apartments
private apartments
co - living
co - living
open office area
audio/ video library
audio/ video libary
exhibition room
main pedestrian path
river- city
water
meeting space
community sapace
inside yard
Workshop area

MASTER PLAN


PLOT AREA
EXISTING BUILDINGS
ENTRY TO THE PLOT
ENTRACE TO HE BUILDING
PEDESTRIAN PATH AND SQUARE
PUBLIC SPACE
PUBLIC SPACE
PLAYGROUND AREA
WATER
GREEN PATH
GREEN AREA WITH SMALL HILLS
BENCH
PLANTS
bicycle storage
entrance to living area
open office area
caffeteria
entrance to living area
entrance to living area
open office area
lisabon film comission area
auditorium for 140 persons
welcome/ reception
caffeteria/ shop
exhibitions room
RUS DA BOAVISTA
BOQUEIRAO DOS FERREIROS
RUA DOM LUIS I
A
B
C
C

SOLAR STUDY

March 22, 2023 – 08:42



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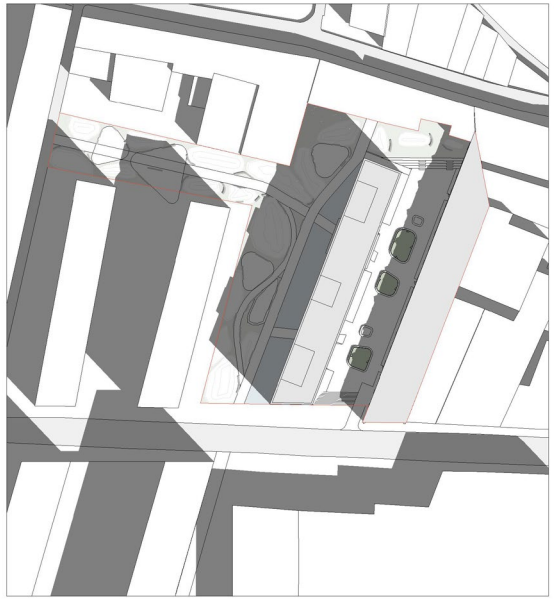

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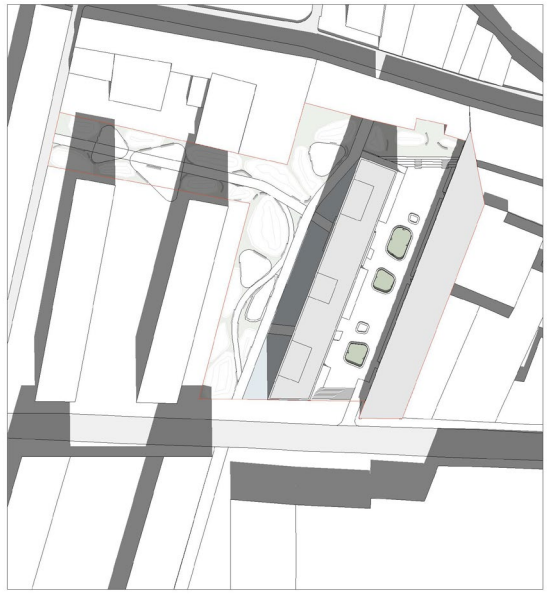

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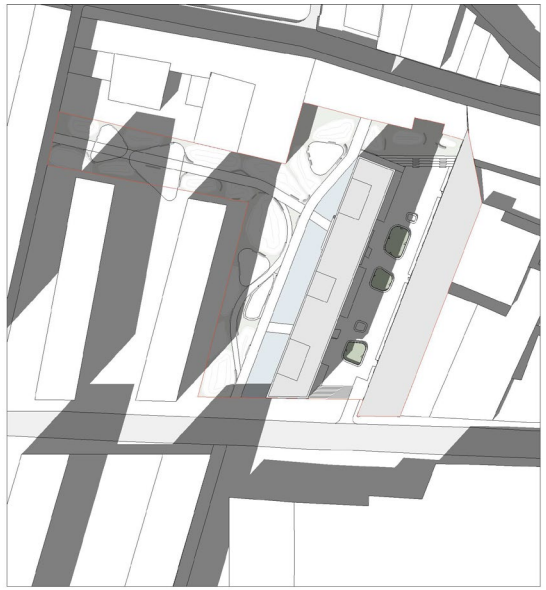

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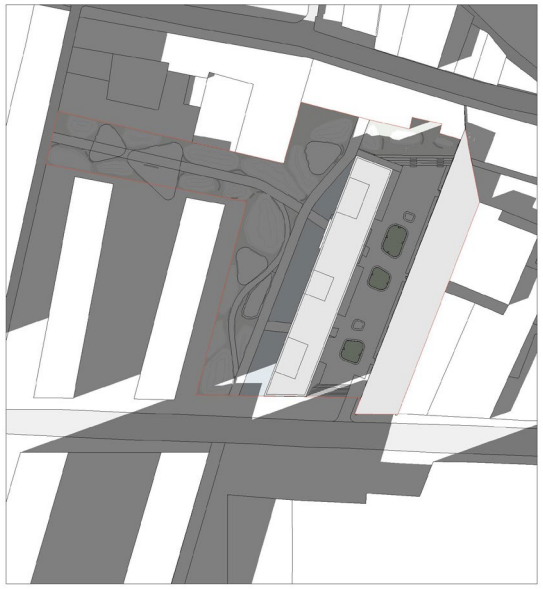

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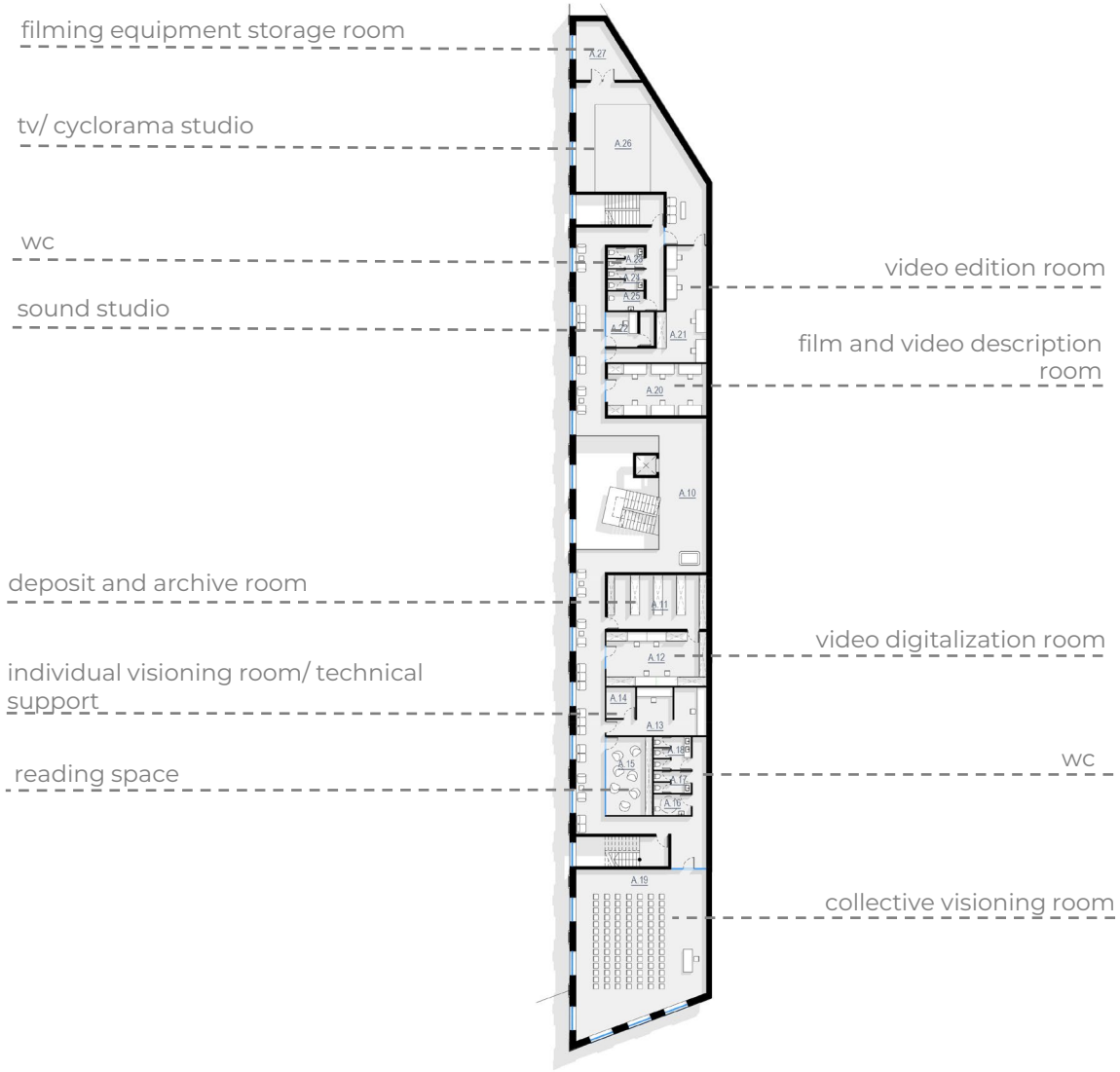
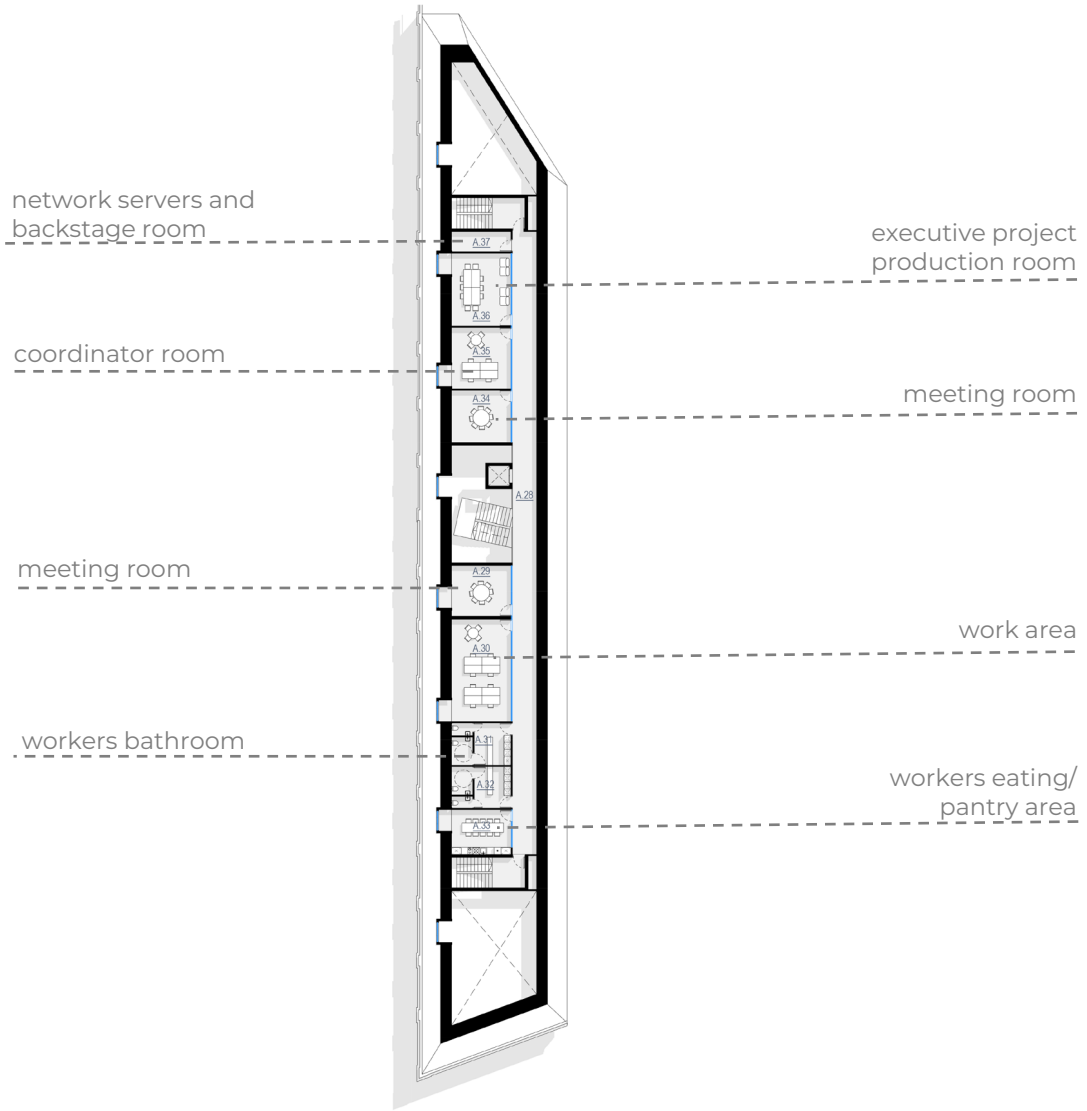
BASEMENT FLOOR PLAN

A BUILDING PLANS

2 FLOOR PLAN



3 FLOOR PLAN



B BUILDING PLANS

B BUILDING PLANS FUNCTION SCHEME

- CO - LIVING ROOMS
- COMMON AREAS
- PRIVATE APARTMENTS

TYPICAL 2-3 FLOOR PLAN

Common area with access to the hole

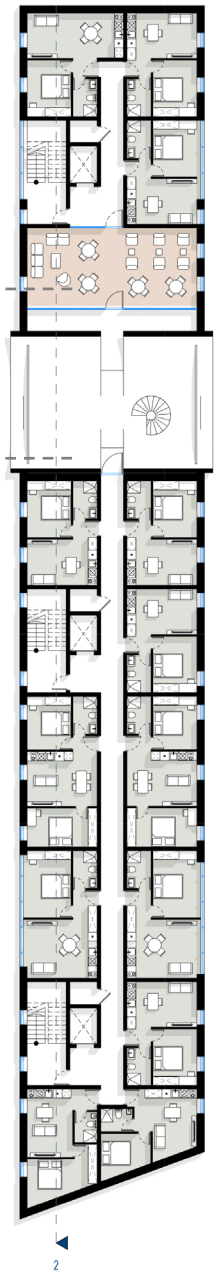
Co-living common area with kitchen, eating and leisure areas.
Access to the 4 floor outside area

Outside area, viewpoint to the city

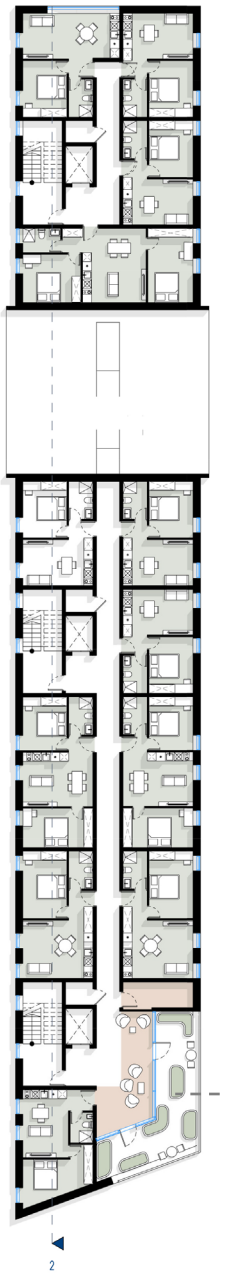
Laundry room

Co-living common area with kitchen, eating and leisure areas.

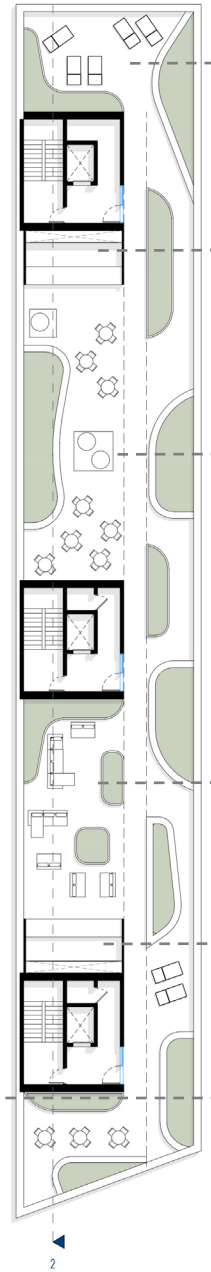
TYPICAL 4-5 FLOOR PLAN



TYPICAL 6-7 FLOOR PLAN



ROOF TERRACE PLAN



Leisure area

Bar for residents use

Picnic zone

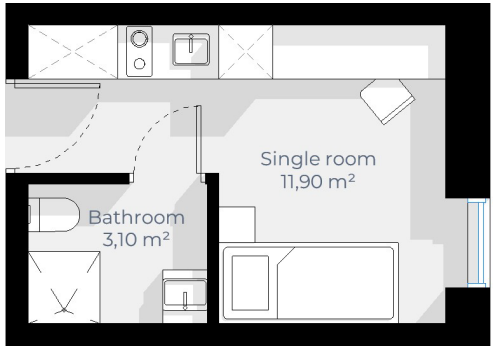
Leisure area

Bar for residents use

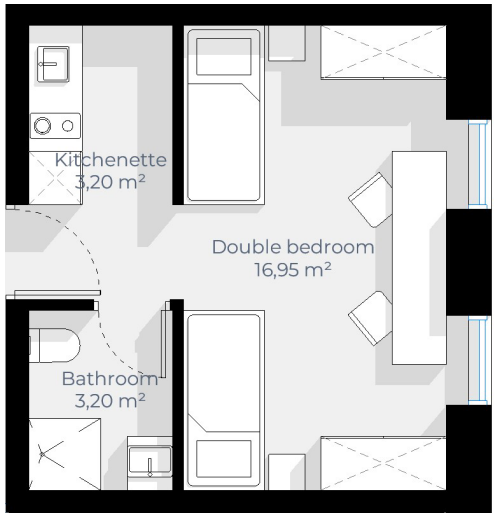
Green balcony,
viewpoint to the river

B BUILDING TYPICAL ROOM PLANS

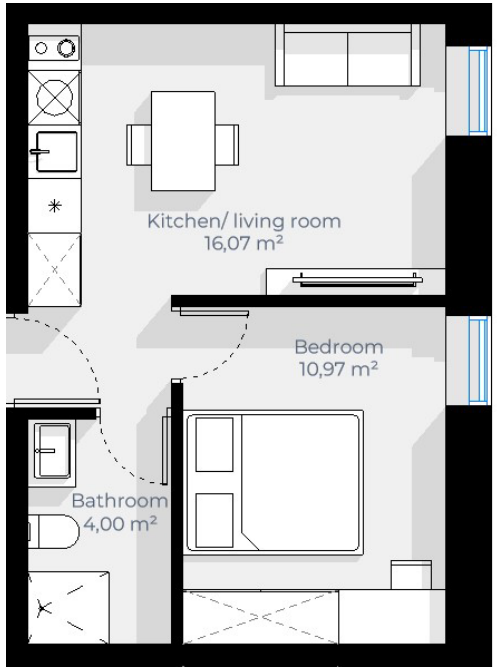
CO – LIVING TYPICAL SINGLE ROOM



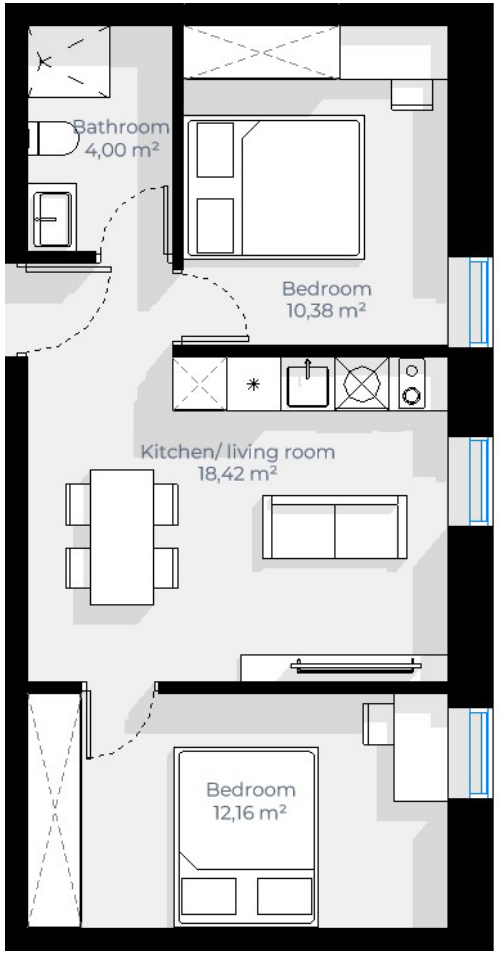
CO – LIVING TYPICAL DOUBLE ROOM



PRIVATE SINGLE BEDROOM APARTMENT



PRIVATE DOUBLE ROOM APARTMENT

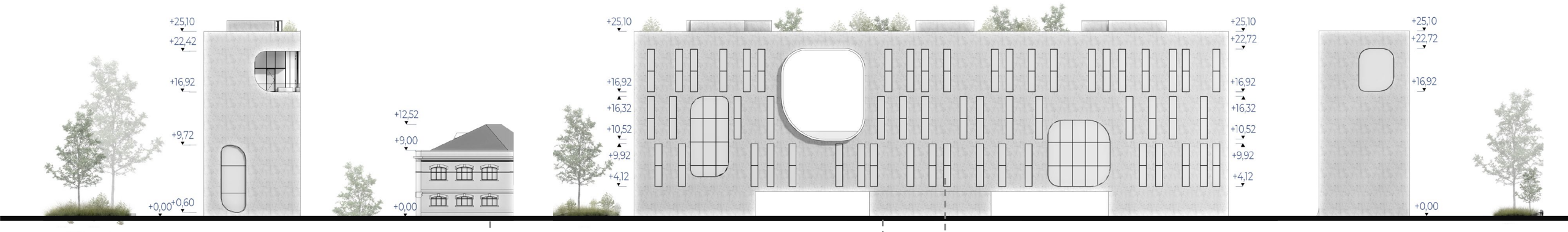


Natural daylight comfort:
- Each room has window that achieves natural daylight autonomy of 60 %
- Narrow windows in rooms controls overheating

Acoustic comfort:
- Sound proof apartment door
- Acoustic panels for ceilings – Saint Gobain ECOPHON – absorbs noise

Thermal comfort:
Saint Gobain Glass – COOL-LITE EXTREME ORAE
- The exceptionally low carbon footprint of ORAÉ®, produced by combining high recycled glass content and renewable electricity.
- COOL-LITE® XTREME coatings reduce carbon emissions generated by energy consumption, when using the building thanks to its high performance in terms of **daylight intake, solar control and thermal insulation.**

ELEVATIONS



SOUTH FACADE

WEST FACADE

NORTH FACADE

AUDIO – VIDEO LIBRARY BUILDING FACADE

All facades are painted with white rough-textured plaster, as if to preserve the building but also to adapt it to its new environment.

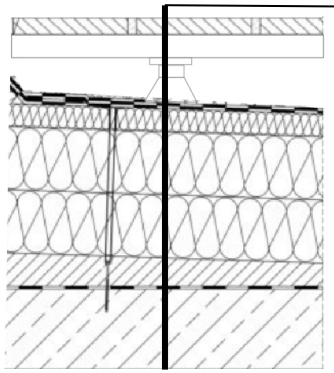
RESIDENTIAL BUILDING FASADE

light grey concrete slab facade reflects heat and sun light. Also concrete's thermal stability can also create more energy efficient buildings. Concrete is provided from local suppliers.

RESIDENTIAL BUILDING FASADE

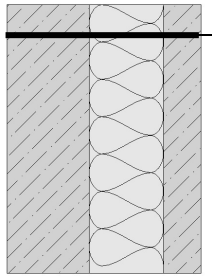
The facade of the new building is characterised by a rhythm of narrow windows, while the main accents are the large, geometric forms with rounded corners. Two forms are covered with curtain wall and the biggest form cuts a hole through the building and the cavity of the stainless steel cladding, which reflects the surroundings allows you to look at them from another angle.

B BUILDING SECTION AND CONSTRUCTION



ROOF DETAIL

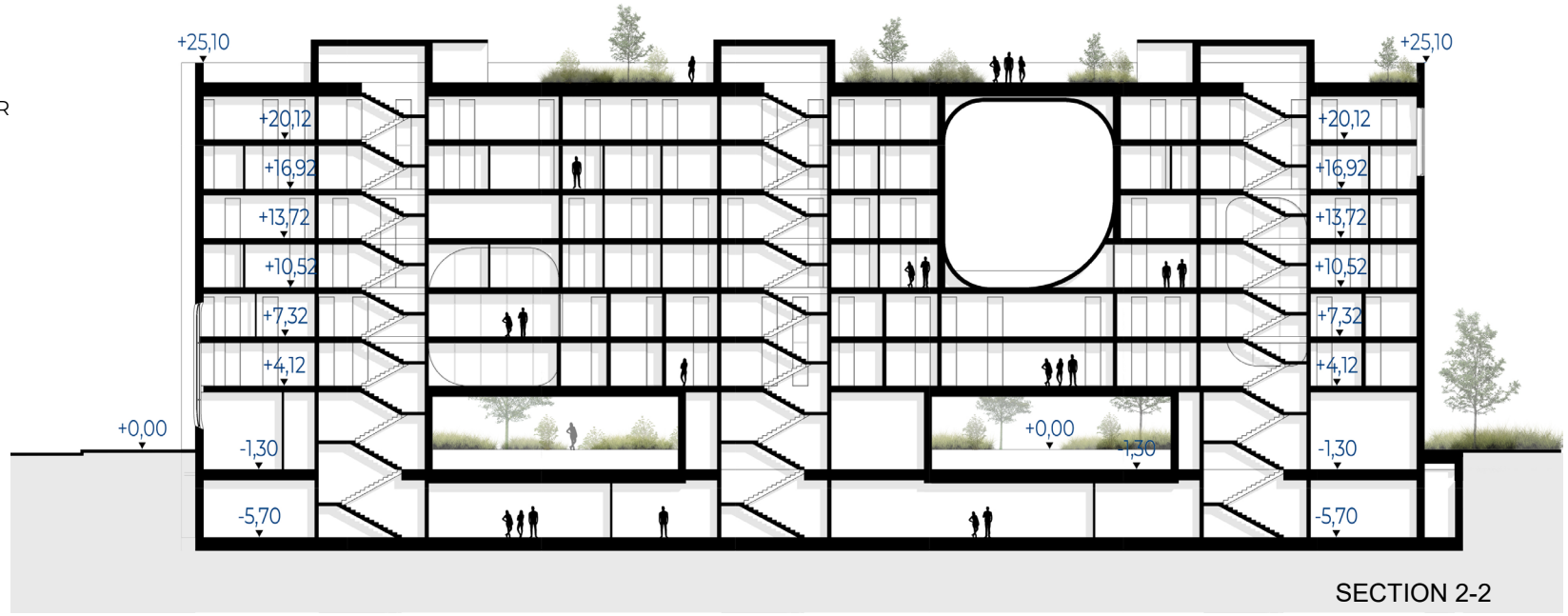
-Composit plastic planks
- Metal frame
- Terrace pedestals
- Waterproofing insulation WEBER
- Mineral rock wool ISOVER Dachotem G 38
- Mineral rock wool ISOVER Dachotem SL 36
- Mineral rock wool ISOVER Dachotem SL 36
- Light concrete fallout layer
- Vapor barrier foil ISOVER Stopair 1104
- Concrete slab – 220 mm



EXTERNAL WALL

- Inte rior finish
- Precast concrete slab – 220 mm
- Thermal insulation ISOVER OL-E 32 – 200 mm
- exterior finish – precast concrete slab 80 mm

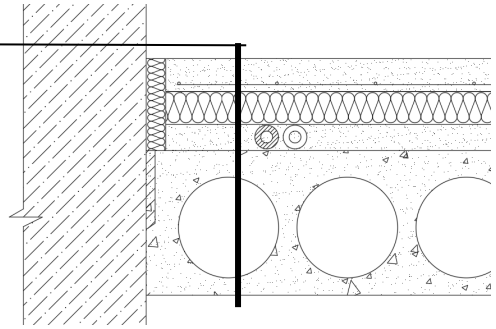
R_W= 54 Db
U= 0.17 W/M2k
REI 60



FLOOR BETWEEN STORIES

- Reinforced concrete layer – 60 mm
- Separating layer
- Sound-insulating mineral wool panel – ISOVER FLO – 50 mm
- Filler layer – 40 mm
- Reinforced concrete slab – 220 mm

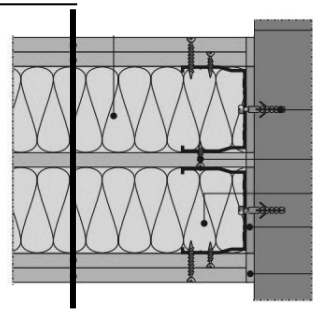
R_W= 64 dB



INTERNAL WALL BETWEEN APARTMENTS

- Rigips gypsum plasterboard 12.5mm PRO Aku
- Rigips gypsum plasterboard 12.5mm PRO Aku
- Acoustic isolation ISOVER KL-AKU, KL37, KL35 – 75 mm
- Rigips gypsum plasterboard 12.5mm PRO Aku
- Acoustic isolation ISOVER KL-AKU, KL37, KL35 – 75 mm
- Rigips gypsum plasterboard 12.5mm PRO Aku
- Rigips gypsum plasterboard 12.5mm PRO Aku

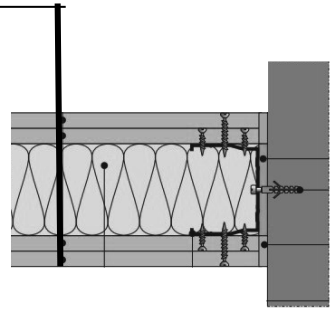
R_W= 67 dB



INTERNAL WALL BETWEEN ROOM

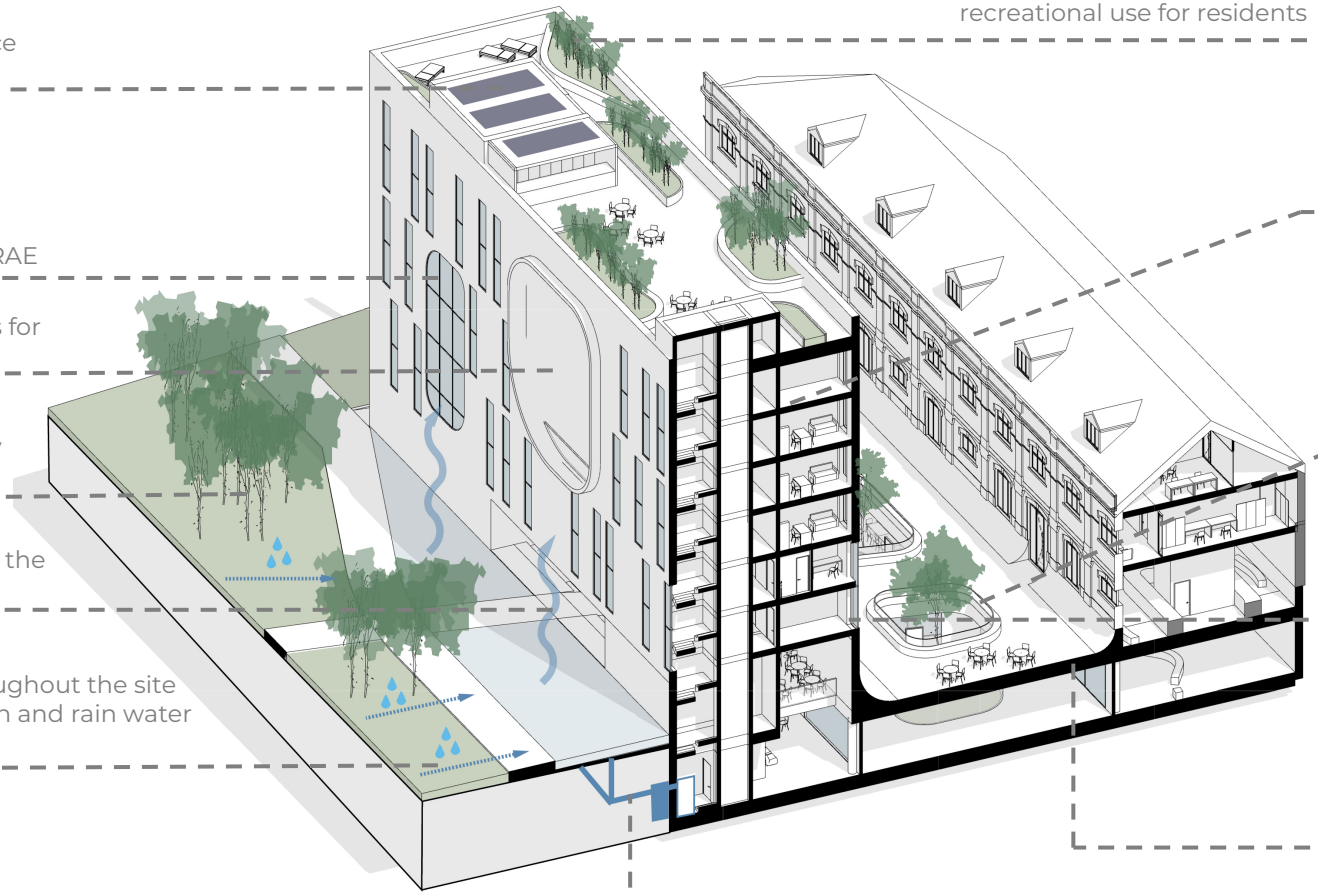
- Rigips gypsum plasterboard 12.5mm PRO Aku
- Rigips gypsum plasterboard 12.5mm PRO Aku
- Acoustic isolation ISOVER KL-AKU, KL37, KL35 – 75 mm
- Rigips gypsum plasterboard 12.5mm PRO Aku
- Rigips gypsum plasterboard 12.5mm PRO Aku

R_W= 61 dB



weber SAINT-GOBAIN ISOVER SAINT-GOBAIN Rigips SAINT-GOBAIN

3D AXONOMETRICAL SECTION



green roof terrace – for recreational use for residents

solar panel system to produce energy for building

to improve acoustic comfort I am using acoustic insulation – ISOVER – KL-AKU

solar control glass SGG COOL LITE EXTREM ORAE

cut-outs formed from square to basement creates internal green courtyards. Plants absorb street and human noise

the main facade cut – out is for entertainment/ creativity

the green space next to the building improves air quality and reduces noise

The water basin helps keep the building from overheating

Natural daylight and ventilation

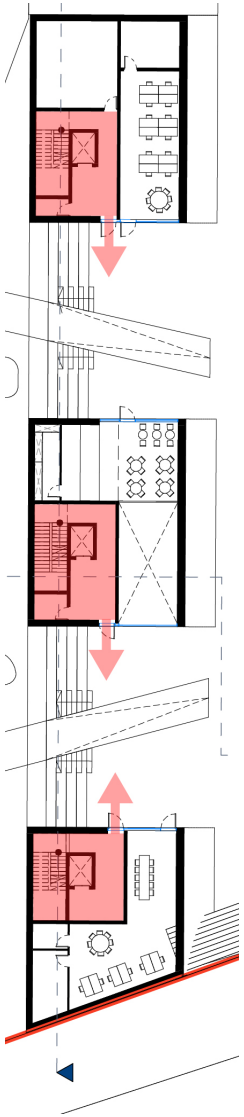
Rain water is collected throughout the site and drained into water basin and rain water harvesting system

an square and a basement connets buildings to allow people move freely between the buildings both inside and outside

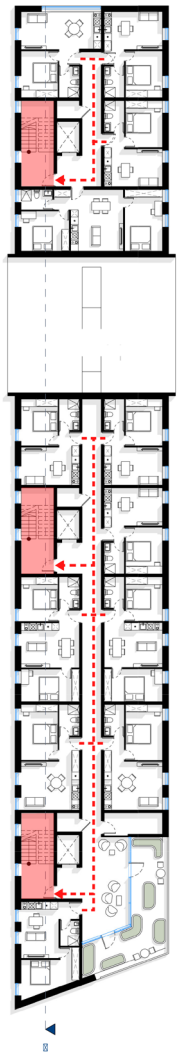
water basin and rain water treatment system

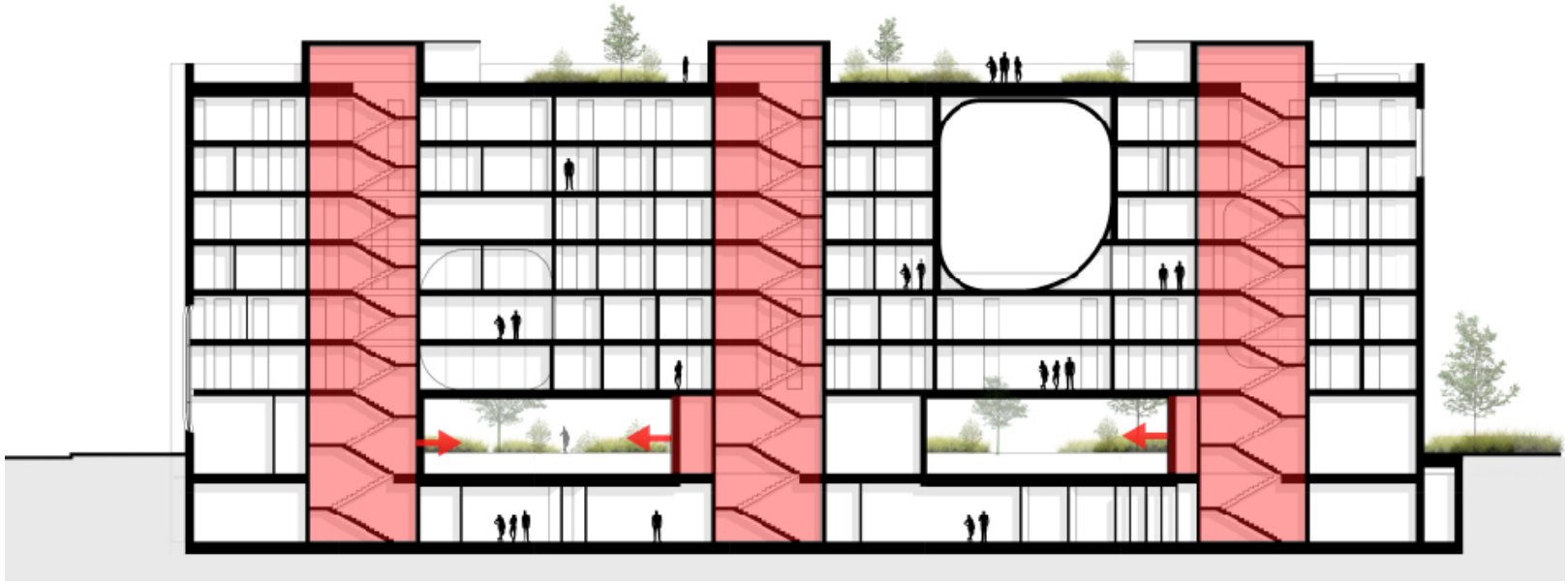
FIRE SAFETY STRATEGY

GROUND FLOOR PLAN



TYPICAL 6-7 FLOOR PLAN





For fire safety I use fire- ressistant insulation and staircase construction- concrete. Also fire – resistant doors and windows in staircase .

All evacuation routes are easilly accessible from all floors and apartments.

ENERGY EFFICIENCY CLASSES

CALCULATIONS SPECIFIC HEAT DEMAND

Transmission Heat Losses: 83562.03 kWh/a

Ventilation Heat Losses: 83181.74 kWh/a

Total Heat Losses: 166743.77 kWh/a

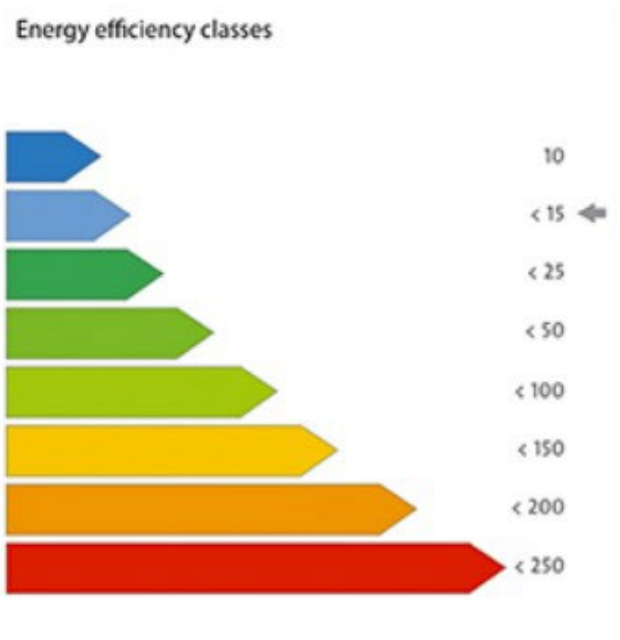
Internal Heat Gains: 33978.97 kWh/a

Solar Heat Gains: 84665 kWh/a

Total Heat Gains: 111471.26 kWh/a

Annual Heat Demand: 55272.51 kWh/a

Specific Heat Demand: 12.95 kWh/(m2a)



CALCULATIONS OVERHEATING

Exterior Thermal Transmittance: 1285.53 W/K

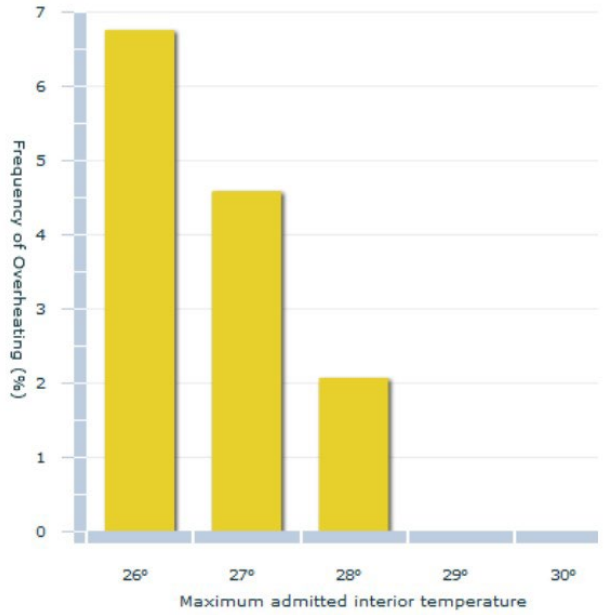
Ground Thermal Transmittance: 20.45 W/K

Ventilation Transmittion Ambient: 640.31 W/K

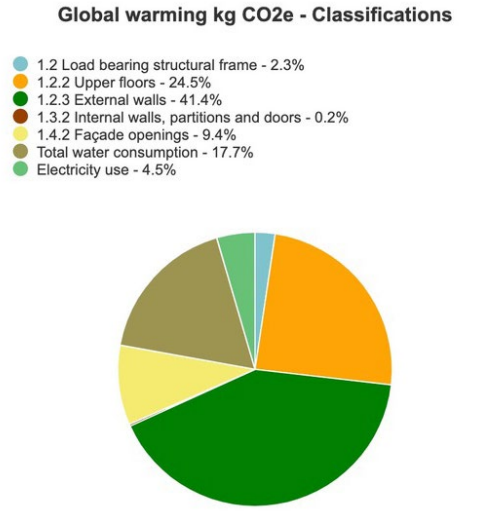
Ventilation Transmission Ground: 0.00 W/K

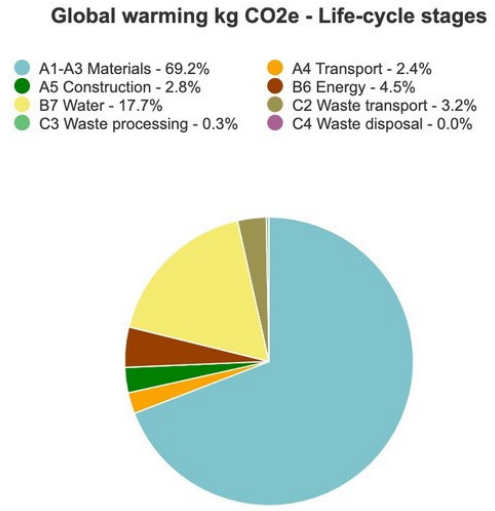
Solar Aperture: 33.96 m2

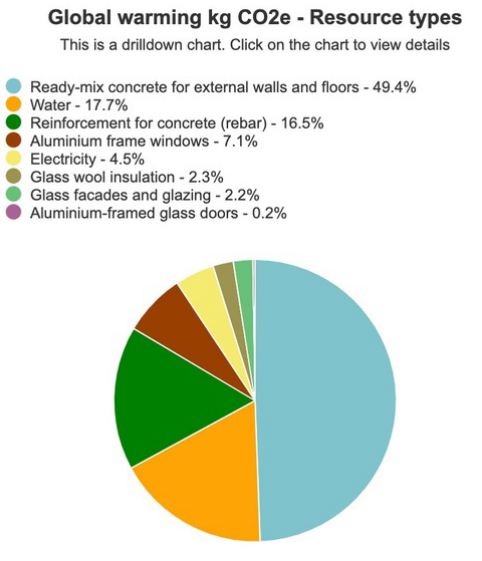
Frequency of Overheating: 6.75 %

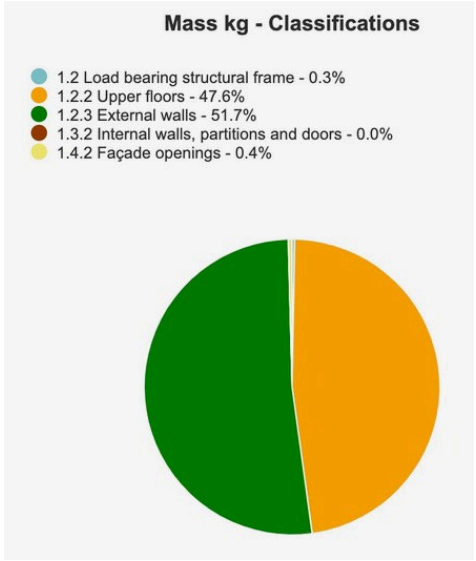


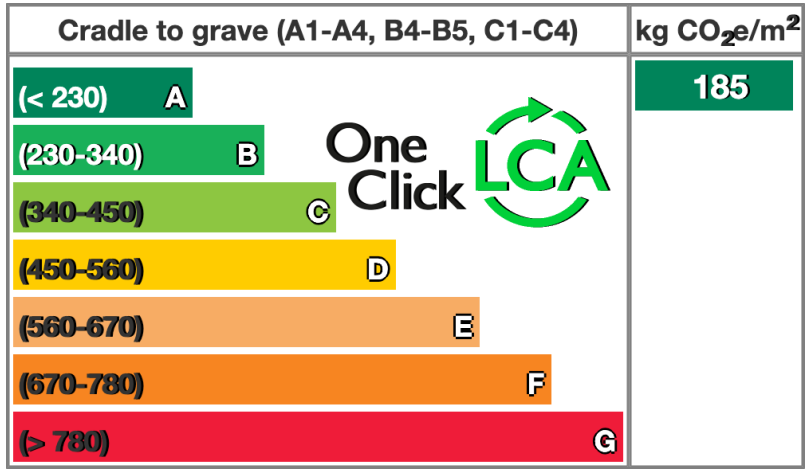
LCA RESULTS

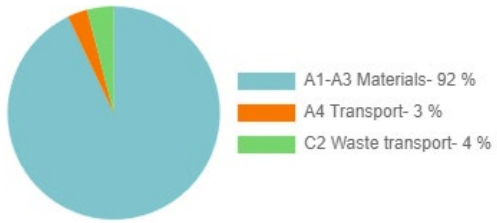

Global warming kg CO2e - Classifications
1.2 Load bearing structural frame - 2.3%
1.2.2 Upper floors - 24.5%
1.2.3 External walls - 41.4%
1.3.2 Internal walls, partitions and doors - 0.2%
1.4.2 Façade openings - 9.4%
Total water consumption - 17.7%
Electricity use - 4.5%

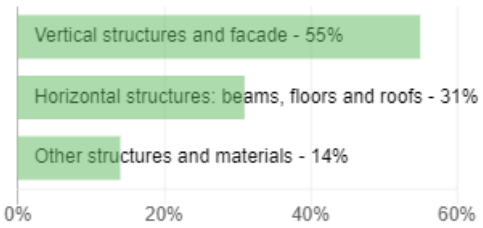

Global warming kg CO2e - Life-cycle stages
A1-A3 Materials - 69.2%
A5 Construction - 2.8%
B7 Water - 17.7%
C3 Waste processing - 0.3%
A4 Transport - 2.4%
B6 Energy - 4.5%
C2 Waste transport - 3.2%
C4 Waste disposal - 0.0%


Global warming kg CO2e - Resource types
This is a drilldown chart. Click on the chart to view details
Ready-mix concrete for external walls and floors - 49.4%
Water - 17.7%
Reinforcement for concrete (rebar) - 16.5%
Aluminium frame windows - 7.1%
Electricity - 4.5%
Glass wool insulation - 2.3%
Glass facades and glazing - 2.2%
Aluminium-framed glass doors - 0.2%


Mass kg - Classifications
1.2 Load bearing structural frame - 0.3%
1.2.2 Upper floors - 47.6%
1.2.3 External walls - 51.7%
1.3.2 Internal walls, partitions and doors - 0.0%
1.4.2 Façade openings - 0.4%


Cradle to grave (A1-A4, B4-B5, C1-C4)
kg CO2e/m2
185
(< 230) A
(230-340) B
(340-450) C
(450-560) D
(560-670) E
(670-780) F
(> 780) G
One Click LCA


A1-A3 Materials- 92 %
A4 Transport- 3 %
C2 Waste transport- 4 %


Vertical structures and facade - 55%
Horizontal structures: beams, floors and roofs - 31%
Other structures and materials - 14%
0%
20%
40%
60%

THANK YOU !