BRUSSELS UNIVERSITY DISTRICT AND THE SOLBOSCH CAMPUS

UNIVERSITY AND THE CITY: ULB SOLBOSCH CAMPUS AND SUSTAINABLE (RE)DEVELOPMENT OF THE BRUSSELS UNIVERSITY DISTRICT (BUD).

SUSTAINABLE URBAN DESIGN STUDIO, MA-1
BRUFACE - ULB + VUB - 2020/2021

SUDS-I PROJECT 2020-21

UNIVERSITY AND THE CITY: ULB SOLBOSCH CAMPUS AND SUSTAINABLE (RE)DEVELOPMENT OF THE BRUSSELS UNIVERSITY DISTRICT (BUD).

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HERA VAN SANDE & GEERT PAUWELS (VUB)

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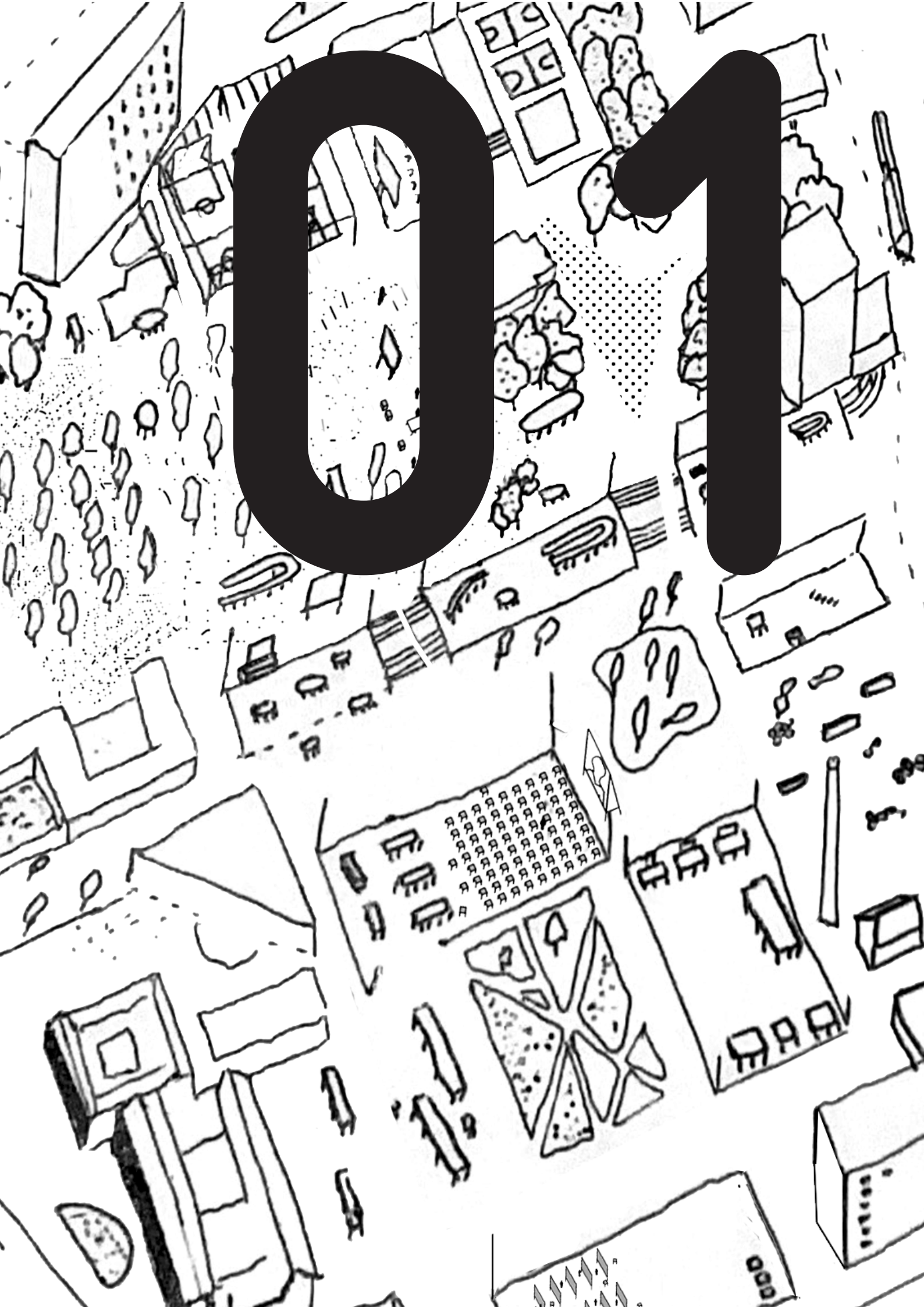
RESILIENT CAMPUS

TEAM:
Aya Akbib, Arnaud Denis, Sarah Trentin, Emma Rodríguez Muñoz, Yannick Scheerlinck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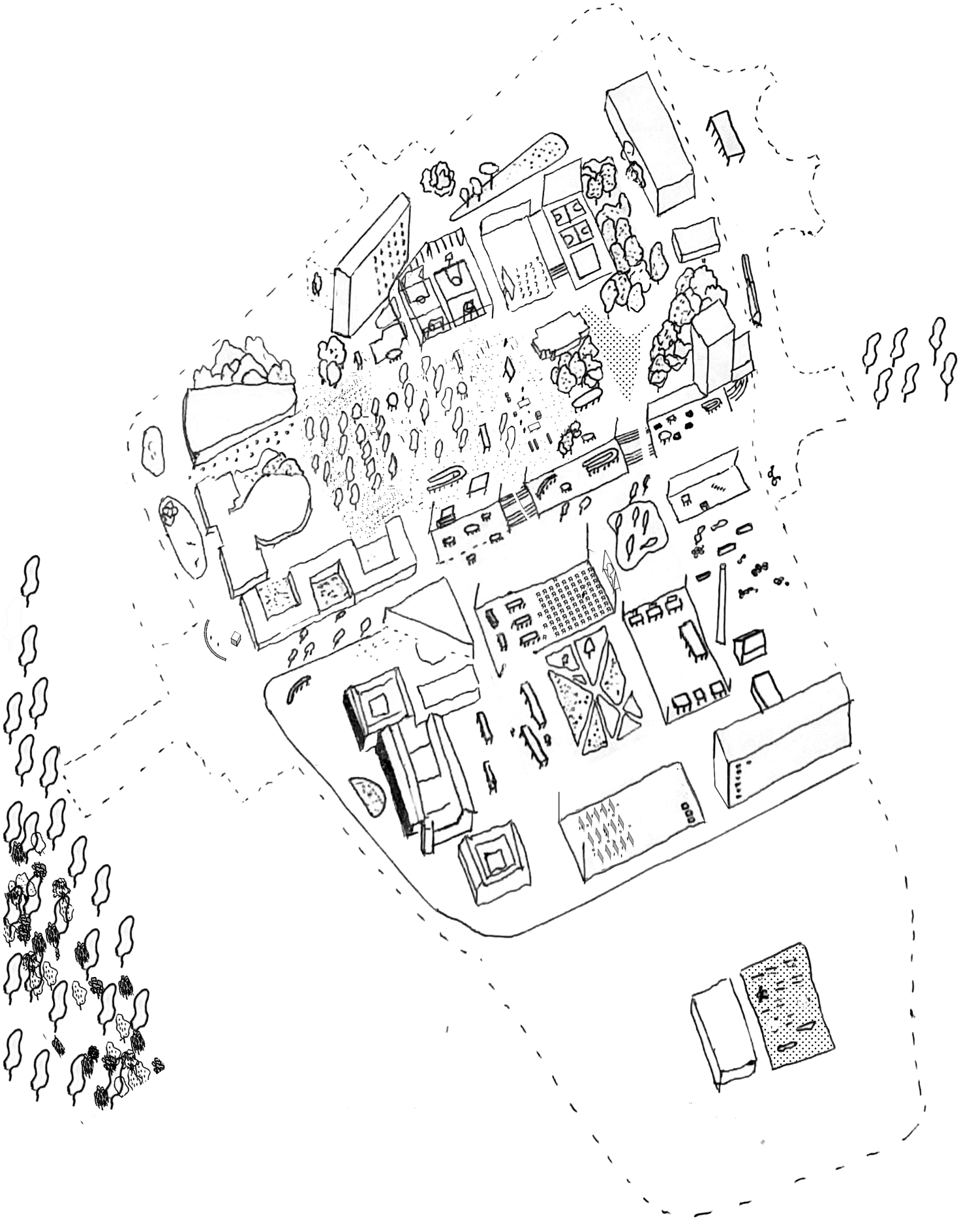


Community

Not connected
Collective life and/or collective culture
Resilient microsystems
Open to the public 24/7

Open spaces

Disconnected / no quality / no diversity
Open spaces
Enhance the existent
New identities
More active and more interconnected
Evolving system

Link to the city

The campus is seen as an island
Interconnection: housing, cafés, restaurants, shops, mobility, sports, open spaces...

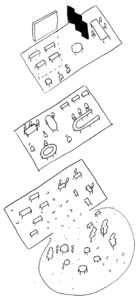
From BUD

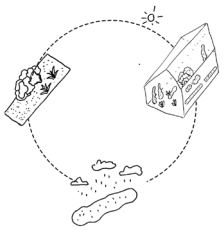
Resilient Campus

To ULB

Programming

Not enough / fixed / monofunctional
Modular
Multifunctional spaces
Learning in the open spaces



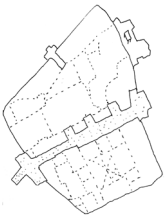


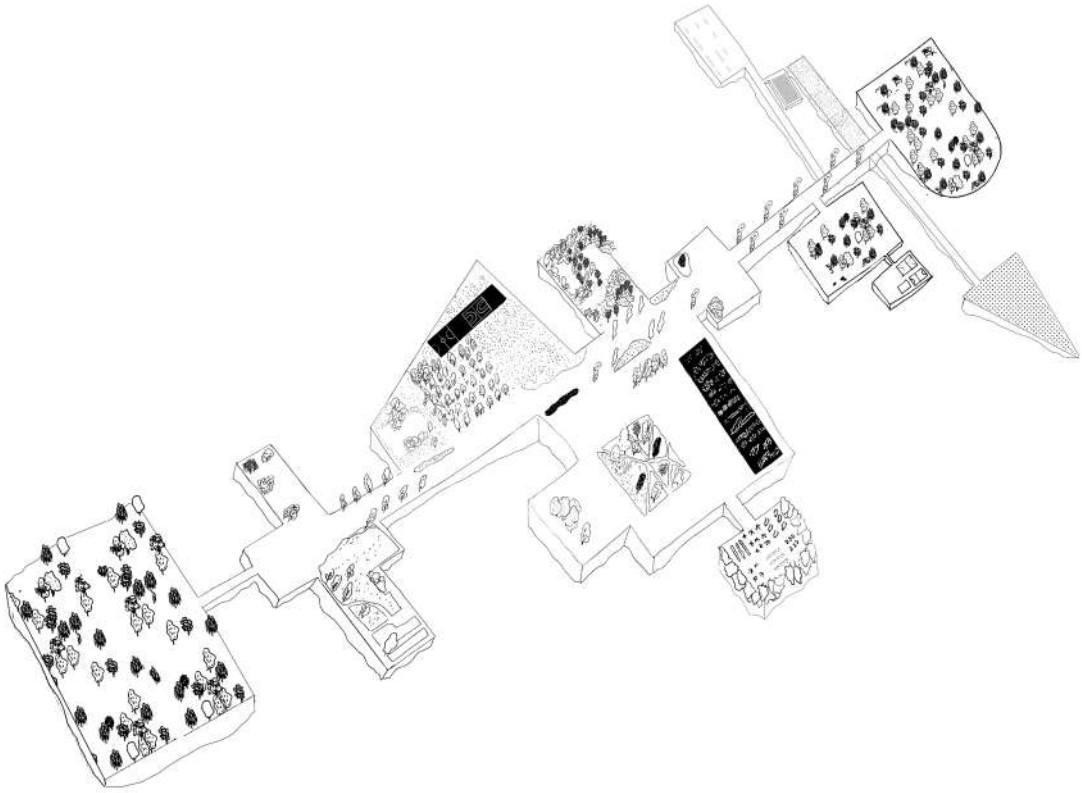
Flow management

Non existent
Sustainable landscape: circularity
- water (storm managements, ponds...)
- energy (double skin, greenhouses)
- waste management (food and materials)

Mobility

Too many cars / disconnected
Promote soft mobility
- Platforms
- Adapting streets
- Car free campus

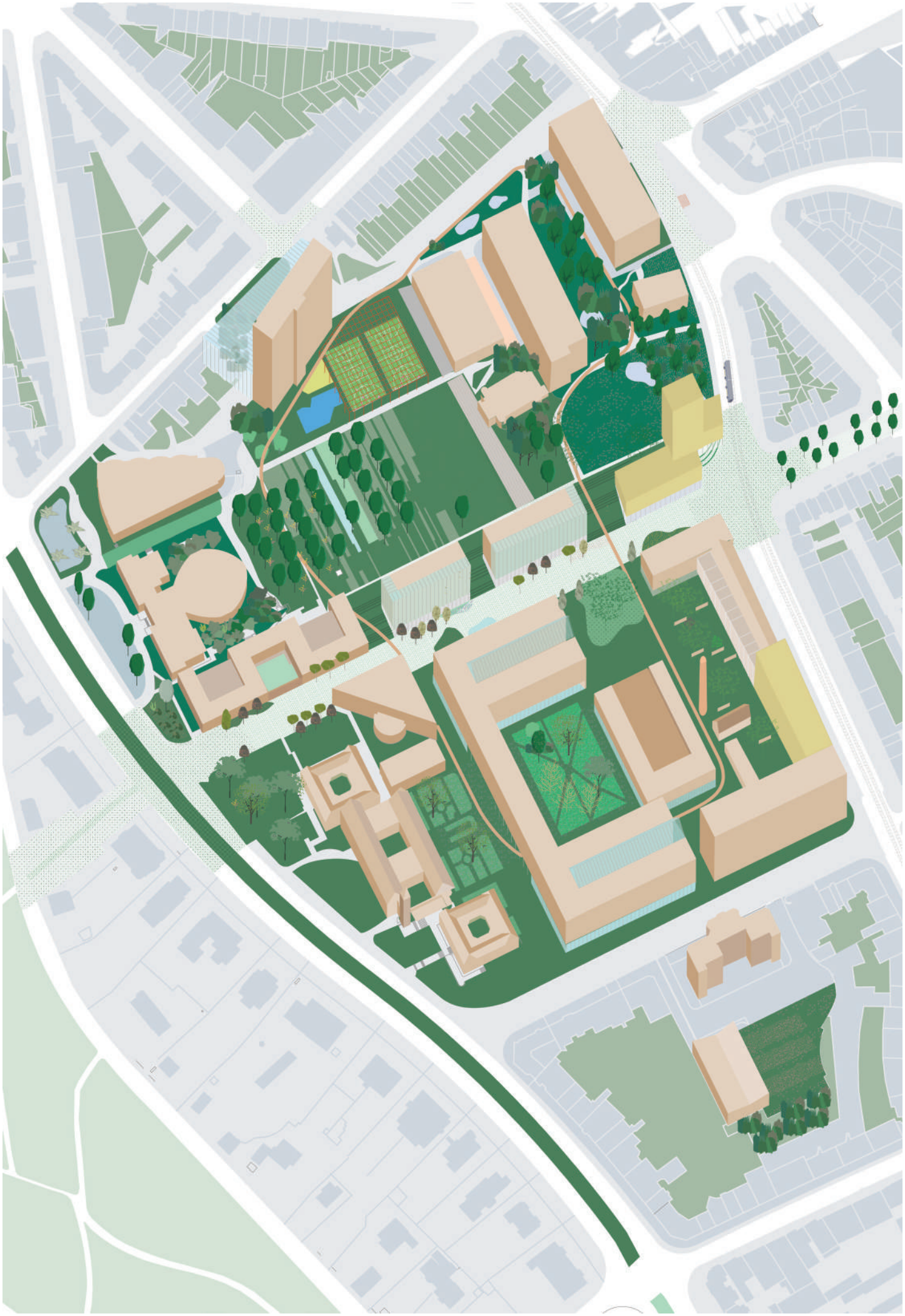




As the studio raised the question of what the university of the future would be and in the current crisis context as well as the emerging debates, we thought that resiliency offers the opportunity to see the campus as a city catalyst. "Resiliency represents the ability of any urban system, with its inhabitants, to maintain continuity through all shocks and stresses, while positively adapting and transforming towards sustainability".

The axonometry illustres our spatial vision of the solbosch, we can see how the buildings are changed, the F building, the U The S provide atriums (indiquer avec la souris), greenhouses and open ground floors. The entrance building provokes encounters between the interior and the exterior spaces but also within the interior spaces themselves. We can also see how it interacts with the platforms and how they "accept the flows" of transit.

BUD vision

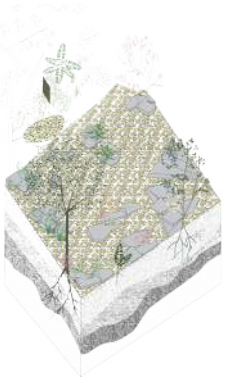


Solbosch Master Plan

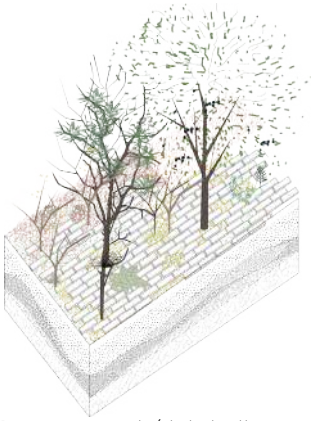
Open spaces

What we found quite interesting on the Solbosch campus is its biodiversity. Especially through the presence of the different types of trees. We have drawn 6 open spaces based on the existing, it showed a lot of potential and only needed to be enhanced.
The forest was the first space we thought of, it surrounds the entrance buildings and the building C situated on the north. The existing compost strengthens it, we have also extended this strategy to surround the buildings with nature. The second place is one of the most emblematic,it is the old parking or what we call the 'student gathering' it represents a wide range of trees which we thought was crucial to keep. They kind of form a natural canopy. This space is perfect for gatherings as it's close to the central hub of the campus. Right next to it, we have thought about a canopy that covers the sports facilities; it could be used for different activities such as markets, student festivities or other community related events. It adds another point of attraction and a new identity to the campus.
Going further, we have the transition space, connected with the platform, it activates the facades, some with a historical importance. On the other side, we have the square G that represents the calm and leisure space; by creating an opening on the ground level of the U building, we tried to connect these spaces.
We have thought about two types of gardens being open spaces; the garden of intersections and the educative gardens. The garden of intersections is the result of demolished buildings, they become a source for new interspecies.The garden concept emphasizes the site and its context. The educative garden on the other hand is located on the kindergarten parking lots. We thought it was important to include the " learning " on the exterior spaces as part of the teaching experiment.

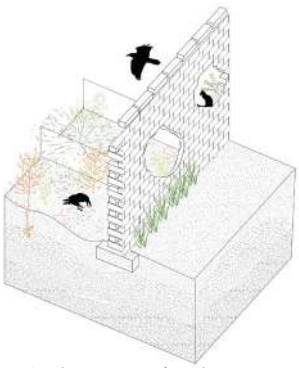
Open spaces
strategies



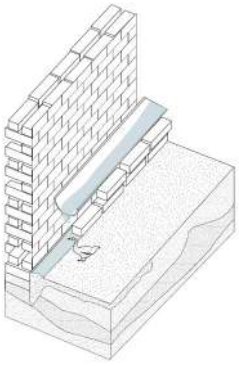
Breaking the carpark tarmac



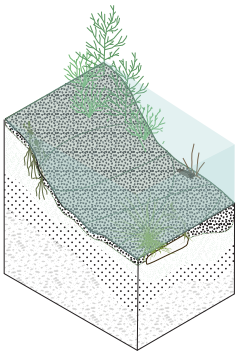
Removing pavements (student gathering: parking- Avenue Paul Héger)



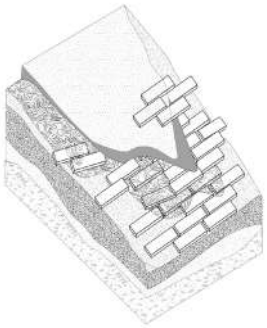
Creating openings for interspecies (educative garden)



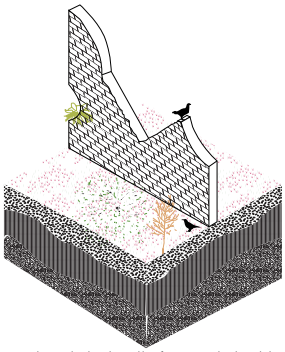
Creating landscapes with water



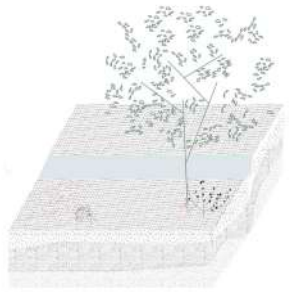
Creating microclimates (forest)



Removing pavements (student gathering: parking- Avenue Paul Héger)

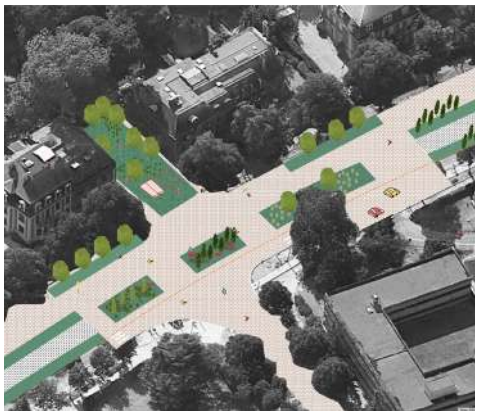


Using demolished walls for new hybridities (garden of intersections)



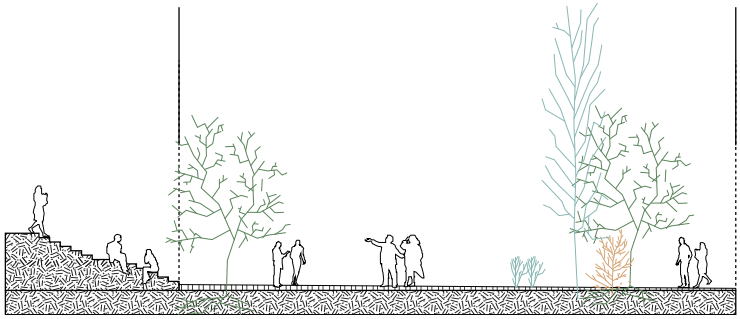
Removing pavements for water managmer and landscape (Avenue Paul Héger)

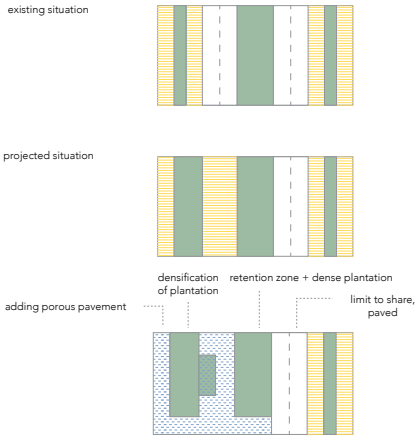
Open spaces
Platforms



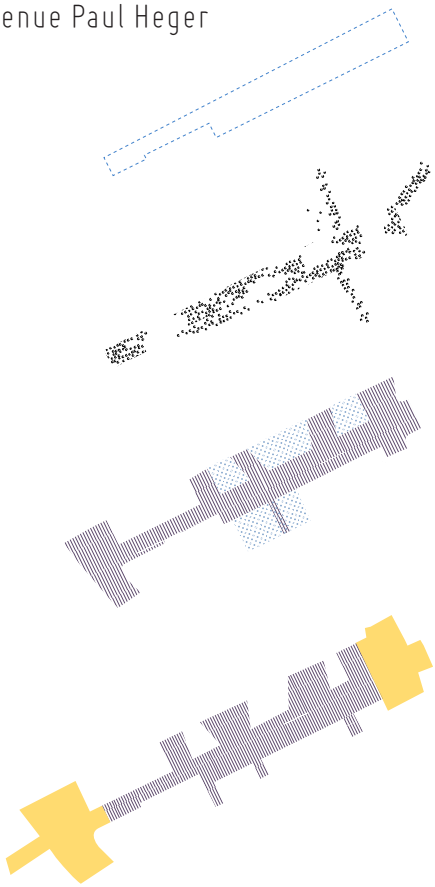
Platforms

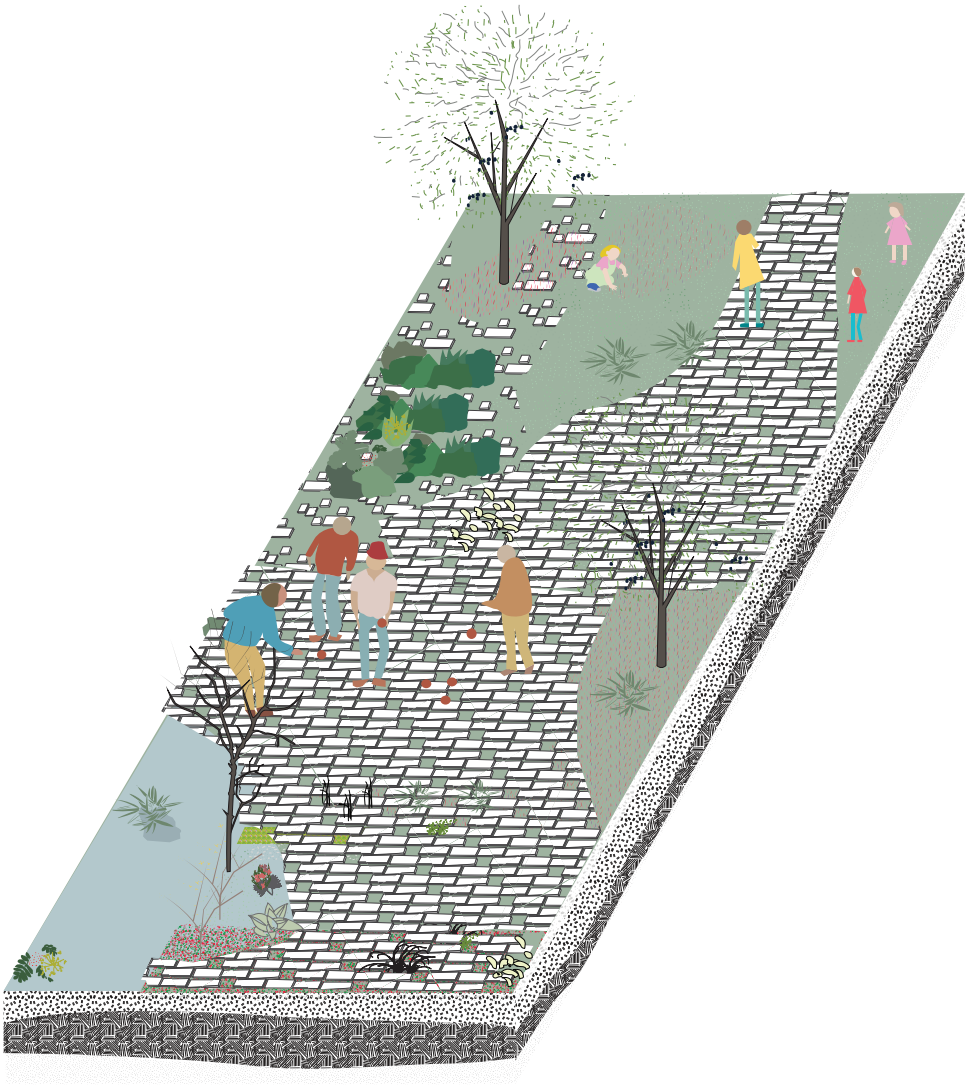
Our vision with these platforms is to develop relays.
They become places of urban intensification. The idea foresees the reduction of the road profiles, leading to a reduction in traffic and car speeds.
The freed space is given to soft traffic (bicycles, pedestrians,...) and plantations as you can see on the left.
This mobility scheme also allows for the development of crossings in order to obtain a network of paths to the surrounding neighborhoods. The platforms are not only as circulation but also as open public space where Hospitality becomes a tool of project through employing strategies such as:
Treatment of the ground with shared surface, pavement permeability but also activating the ground facades.





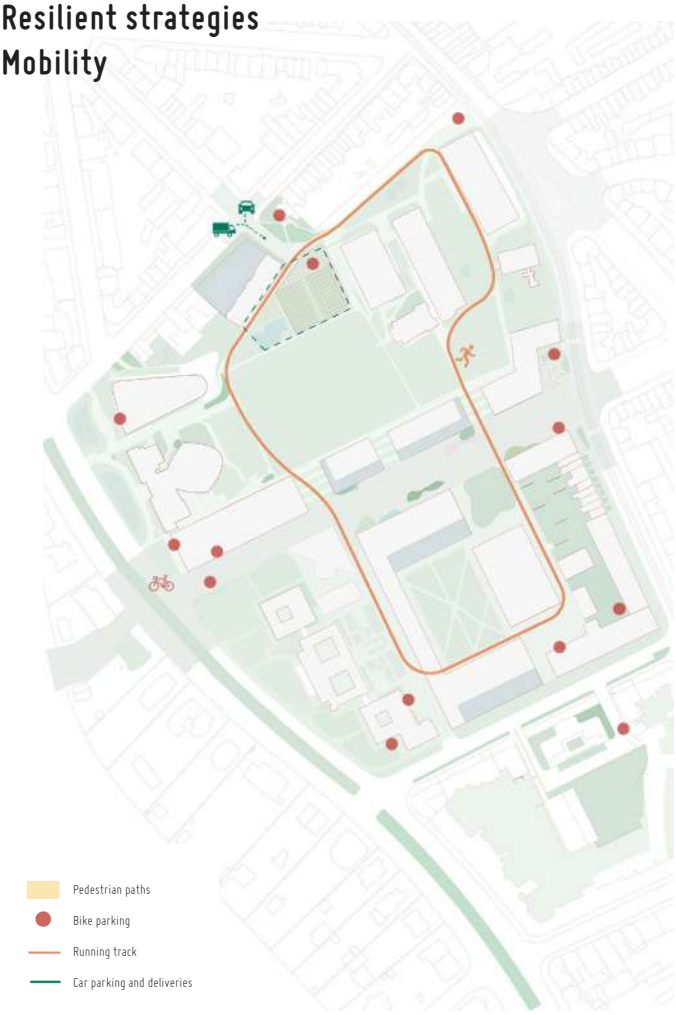
Avenue Paul Heger



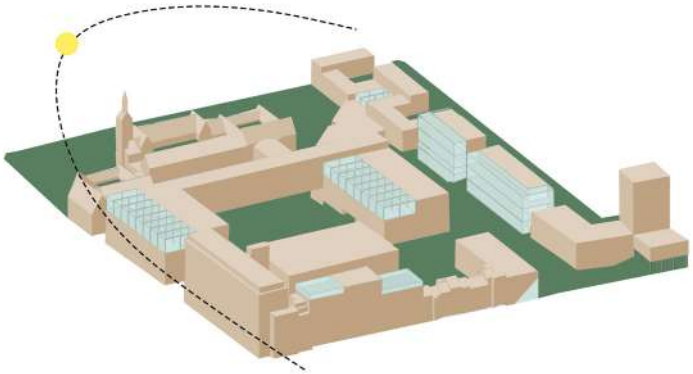


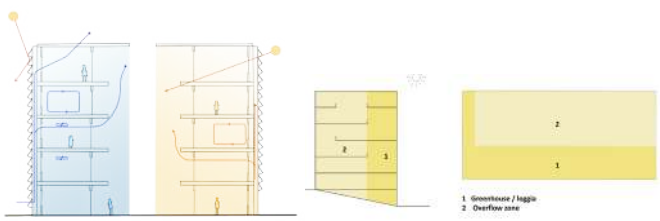
Resilient strategies

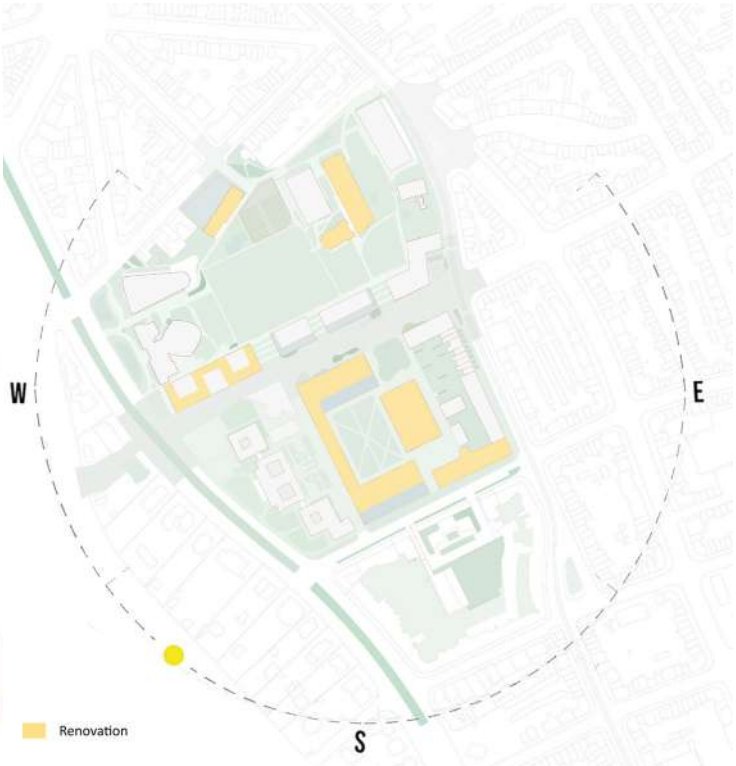
Mobility



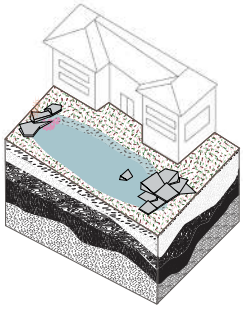
Energy

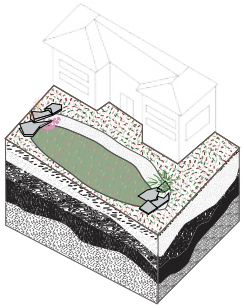






Water





Sizing of Wetlands	
Précipitation [mm]	100.00
Duration [h]	24
Area Solbosch [m2]	170,000.00
Collection Area [m2]	57,208.50
Remaining Area [m2]	112,791.50
Volume d'eau [m3]	11,279.15
Reduction Factor	0.50
Total Wetland Size [m2]	2,819.79
Amount of Wetlands	1
Average Wetland Size [m2]	2,819.79

TOTAL COLLECTION AREA [m2]	57,208.50
Annual Precipitation [mm]	818.00
Rain Water Collection [m3]	46,796.55
Solbosch Water Demand [m3]	73,000.00

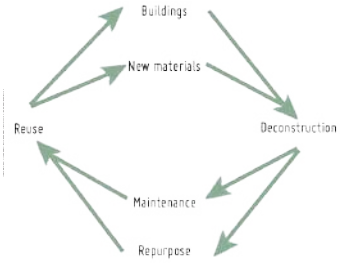
Rainwater Storage	
Annual Rainwater Collection [m3]	46,796.55
Autonomy [weeks]	2
Total Water Tank Volume	7,820.79
Number of Water Tanks	79
Average Water Tank Size [m3]	99.00

Waste

3000 daily meals
87,5 m² / person / year
125 days on campus -> 30m² per student / year
78.000 m² necessary
11.200 m² available on campus : 14%

Waste as resource: matériauthèque

Try, learn, educate



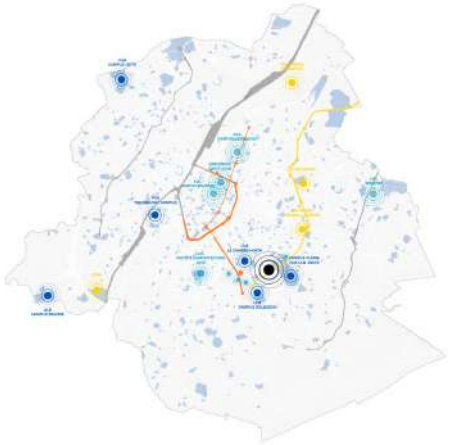
"Regular" waste

Metal waste: 33,34 ton
Iron scrap: 1,37 ton

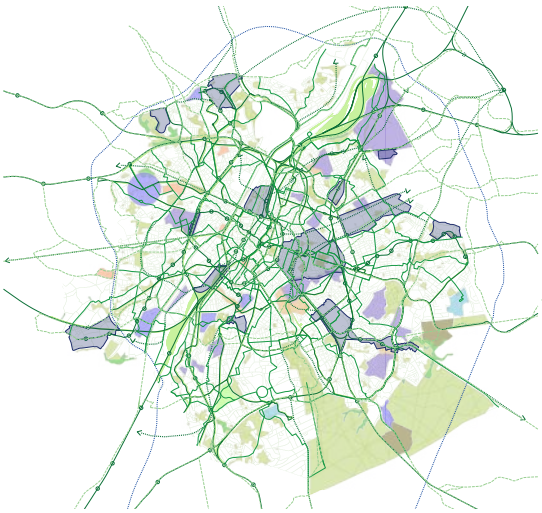
UNIVERSE-CITY

TEAM:
YASMIN ALLAOUZI, NILOOFAR AMINI, PAULIEN BEECKMAN, PAULINE HAROU, AHMED ROSHDY SOLIMA & ALEXANDRE ROVERE

02

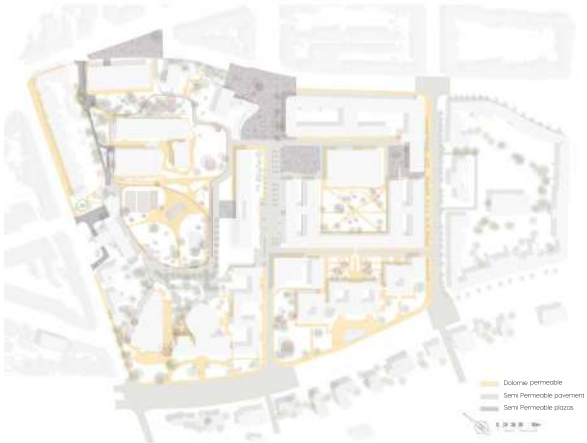


Universe-cities

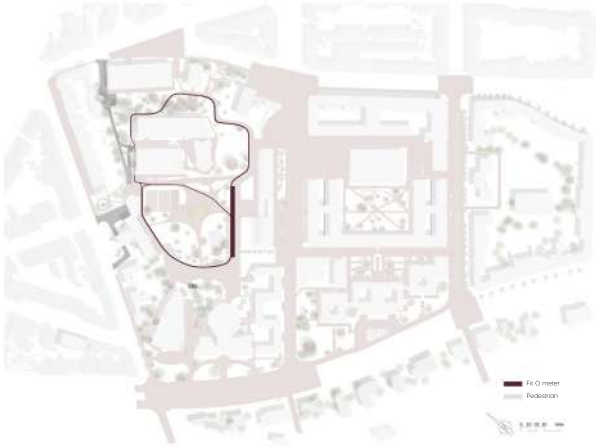


Soft Empowerment

Green space

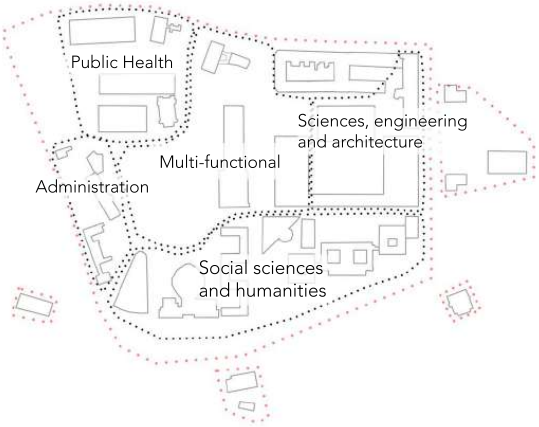


Permeability



Fit-O Meter

Open space



Pole of interest

Permeable groundfloor

The university is a meltingpot of different science, of different knowledge. It's an alternative disciplin that indirectly support our society. The idea of universe-city aim to break the imagining frontier between those two entities, it makes of the university an open space, with multiple sources. In our vision of the territory, it make sense to see Brussel as a complex web, where the universe-cities has an important role. The pole solbosh play his part in it.

We highlighted 5 main aspects of the Solbosch campus and its surrounding at the scale of the Brussels University District. Linking the campus to the city, mobility systems , the landscape design, the environmental developments (including water management, and energy) and the notion of harmonism, in broad aspects, are the main point of concerns.

These strategies not only help us to discuss sustainability beyond the environmental issues, but the social and economical levels are also taken into account. Through connecting the university with the city of Brussel, the campus will be transformed into open space for the neighbourhood. Our first ambition is to open the campus to the city. Regarding this, we provide several common areas such as swimming, sport fields, urban farming, a rooftopplayground, open libraries, a café and food services, a ressourcery, auditoriums and finally multi-functional areas to be shared for public events, conferences, etc. Therefore the new entrance building will be filled with community services as a link to the city.

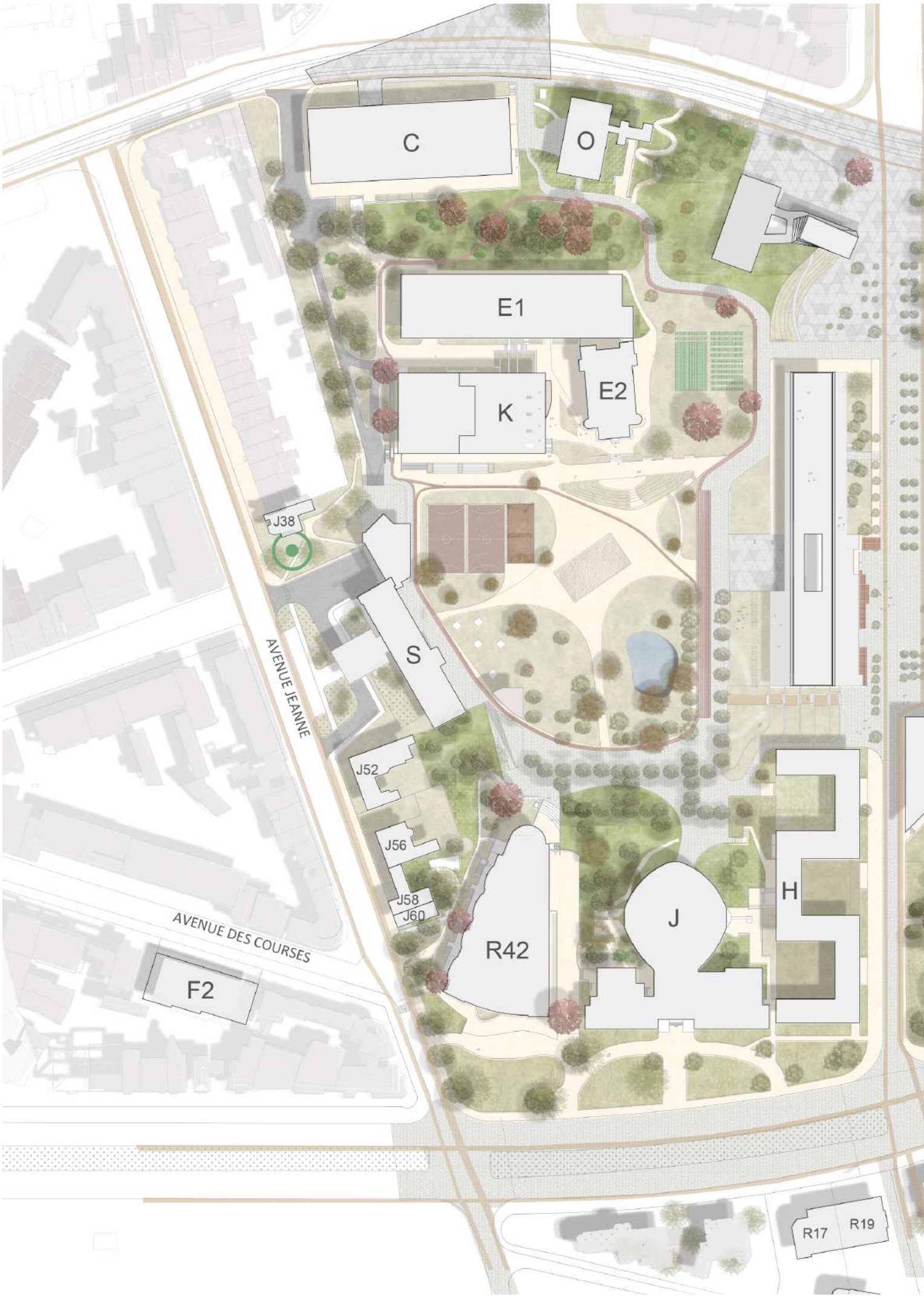
shared for public events, conferences, etc.

nity services as a link to the city.

We then focus on the mobility on the scale of the campus and the BUD. For the BUD we use the principle of the Superquadra of Barcelona.
On the campus we remove car accesses, with this we want to make public transport and soft mobility more attractive. Therefore, parking spots can be transformed as multi-functional areas.

Regarding environmental issues, the water is managed in a way to prevent flooding on campus and more importantly to prevent the water from going to the lower lying areas in the BUD. The following challenge that we tackled is energy. On campus we work further to diminish heat loss, using more renewable energy like solar panels and geothermal energy.

The last ambition is the symbiosis and building development. One of the main strategies that we use for the master plan is to stay within the footprints of existing buildings. Therefore we create extensions on top of buildings or use the footprints of existing ones.
Since one of the main problems with the campus is a shortage of classrooms we work with reprogramming to provide more classrooms. Furthermore, we also provide a faculty reprogrammation to improve their development and character.


C
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E1
E2
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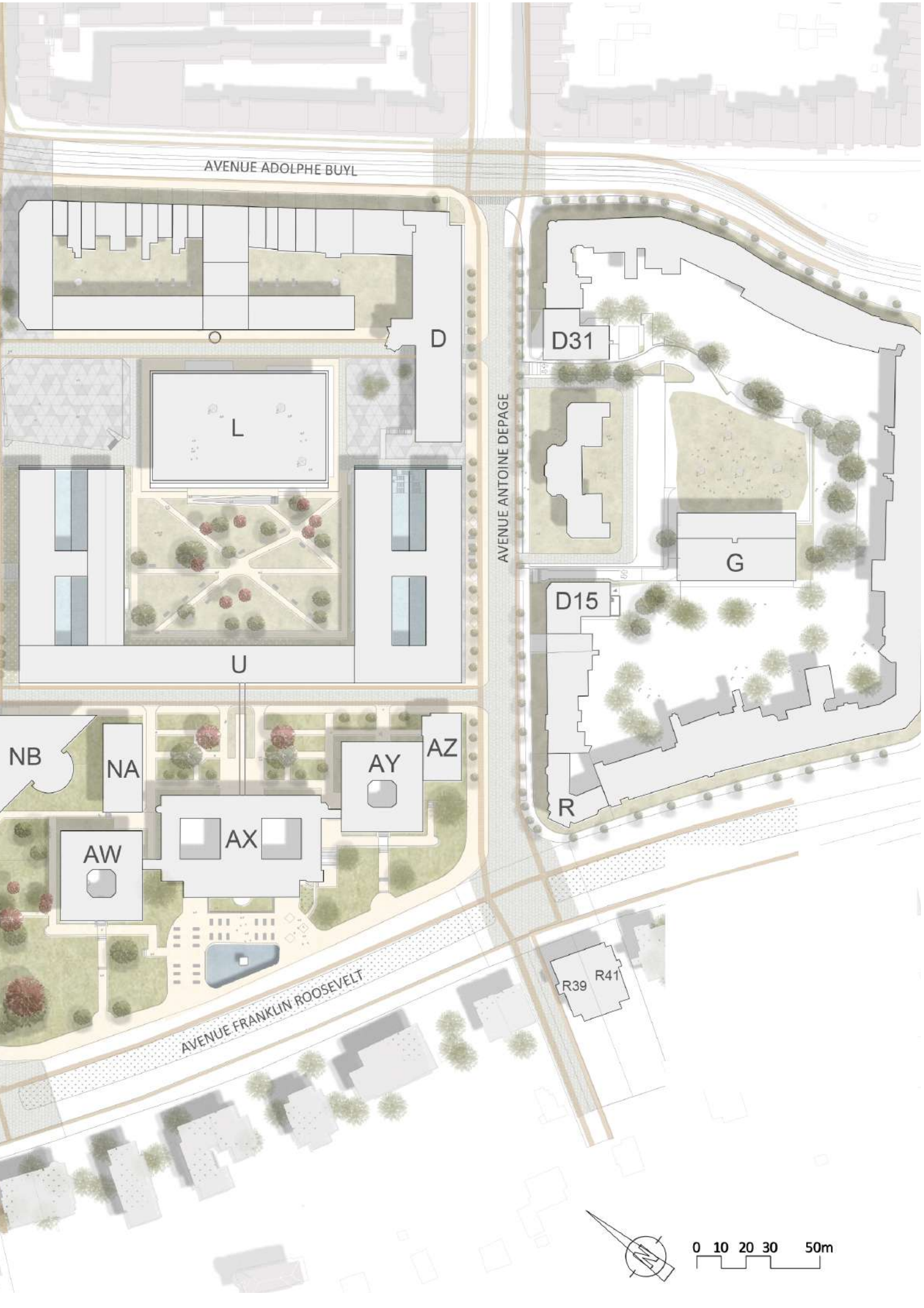
J38
S
AVENUE JEANNE
J52
J56
J58
J60
R42
J
H
AVENUE DES COURSES
F2
R17
R19


AVENUE ADOLPHE BUYL
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AVENUE ANTOINE DEPAGE
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R41
AVENUE FRANKLIN ROOSEVELT
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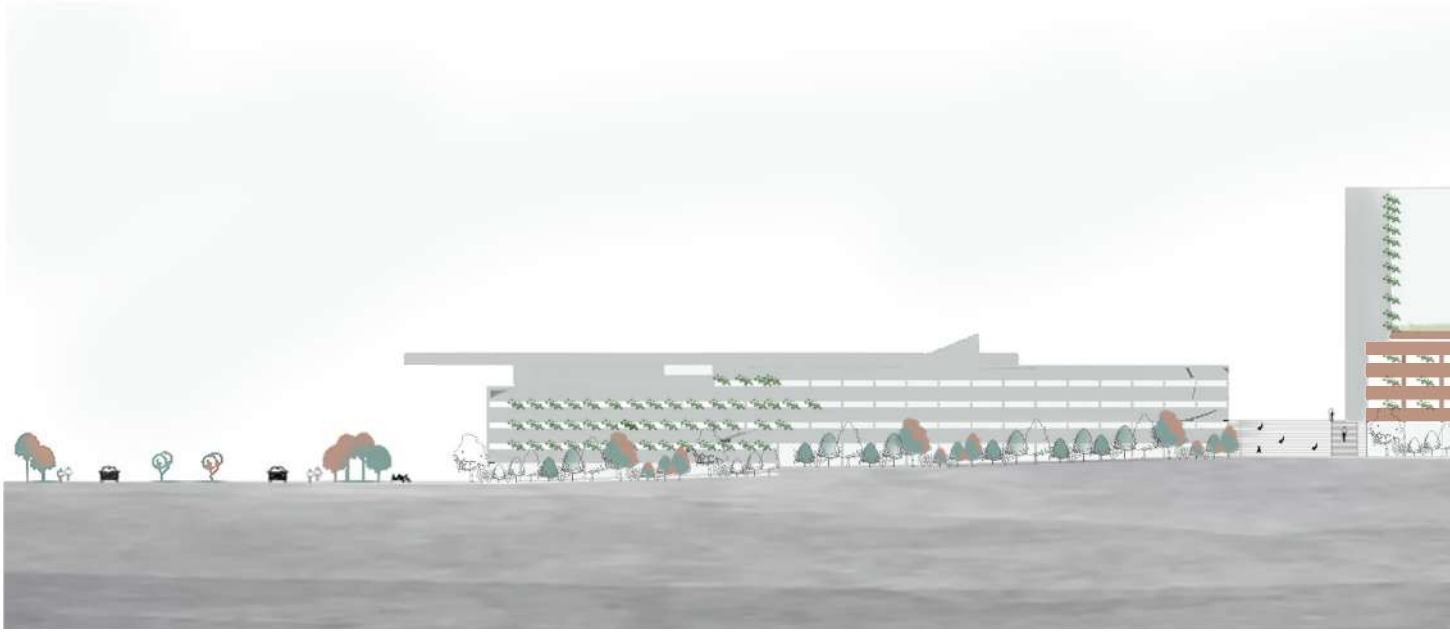

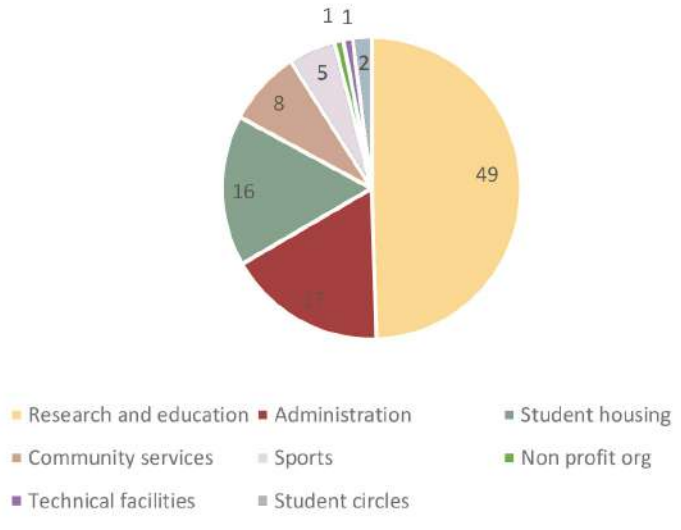
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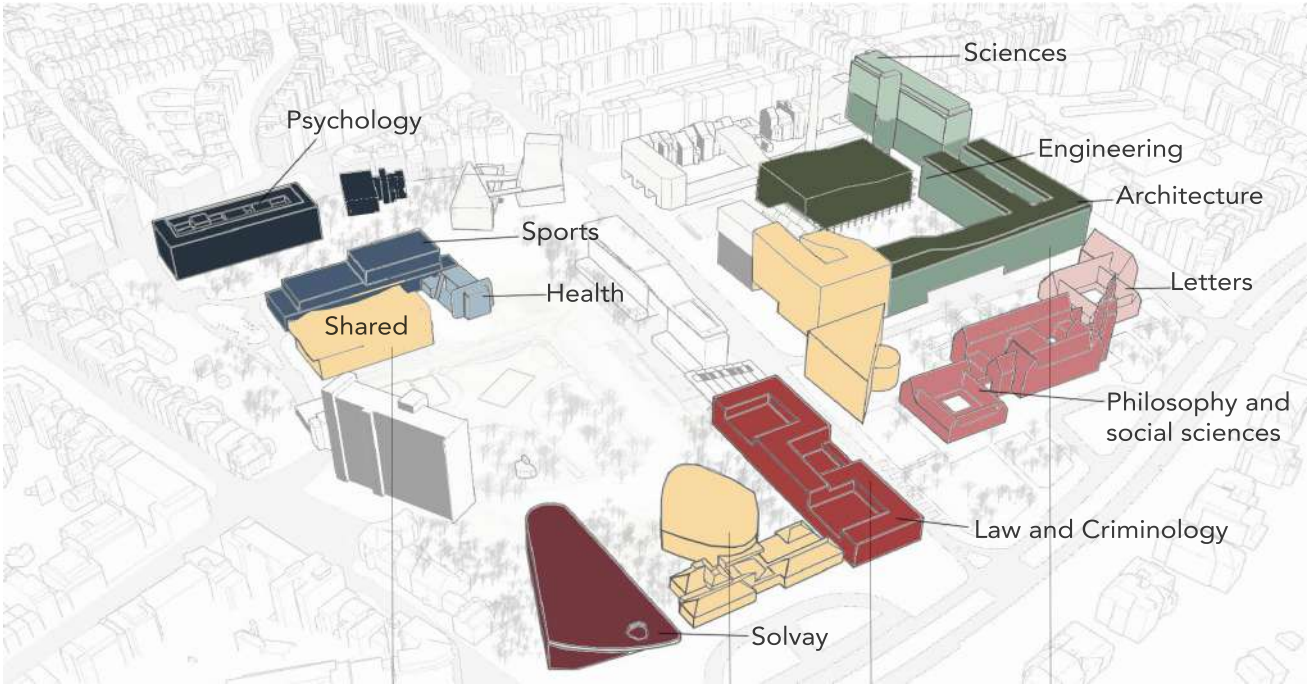
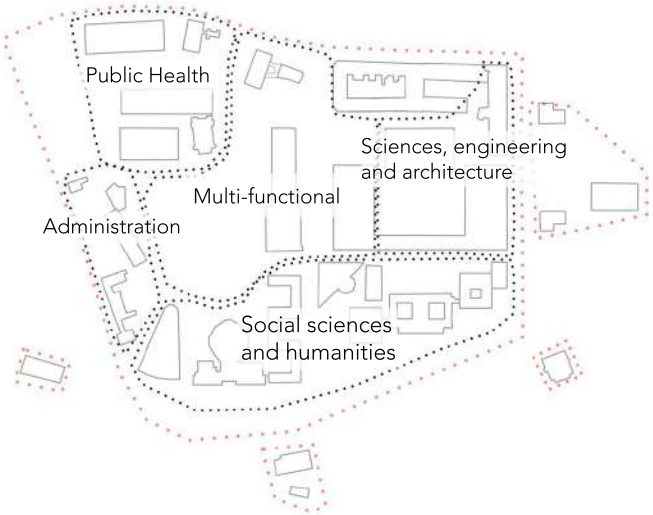
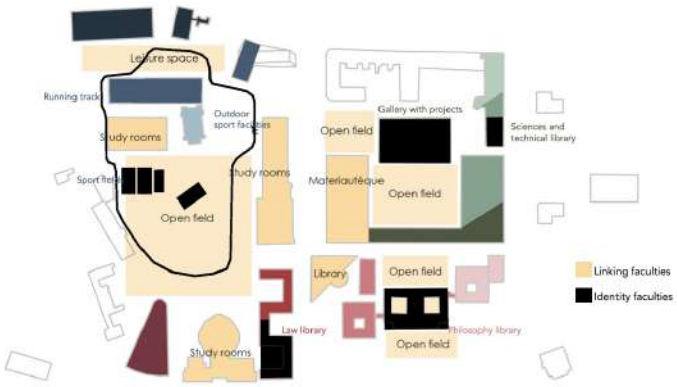
Research and education
Administration
Student housing
Community services
Sports
Non profit org
Technical facilities
Student circles


Sciences
Psychology
Engineering
Architecture
Sports
Letters
Health
Shared
Philosophy and
social sciences
Law and Criminology
Solvay


Public Health
Sciences, engineering
and architecture
Multi-functional
Administration
Social sciences
and humanities


Leisure space
Running track
Outdoor
sport facilities
Study rooms
Gallery with projects
Open field
Sciences and
technical library
Sport field
Study rooms
Materiautéque
Open field
Open field
Library
Open field
Linking faculties
Identity faculties
Law library
Philosophy library
Study rooms
Open field

REBIRTH

TEAM:
RAZAN ATWI – ZAINAB FAIDANI – ILYAS OULAD THAMI
ELEONORA RUBINACCI – KOEN VAN OVERSTRAETEN

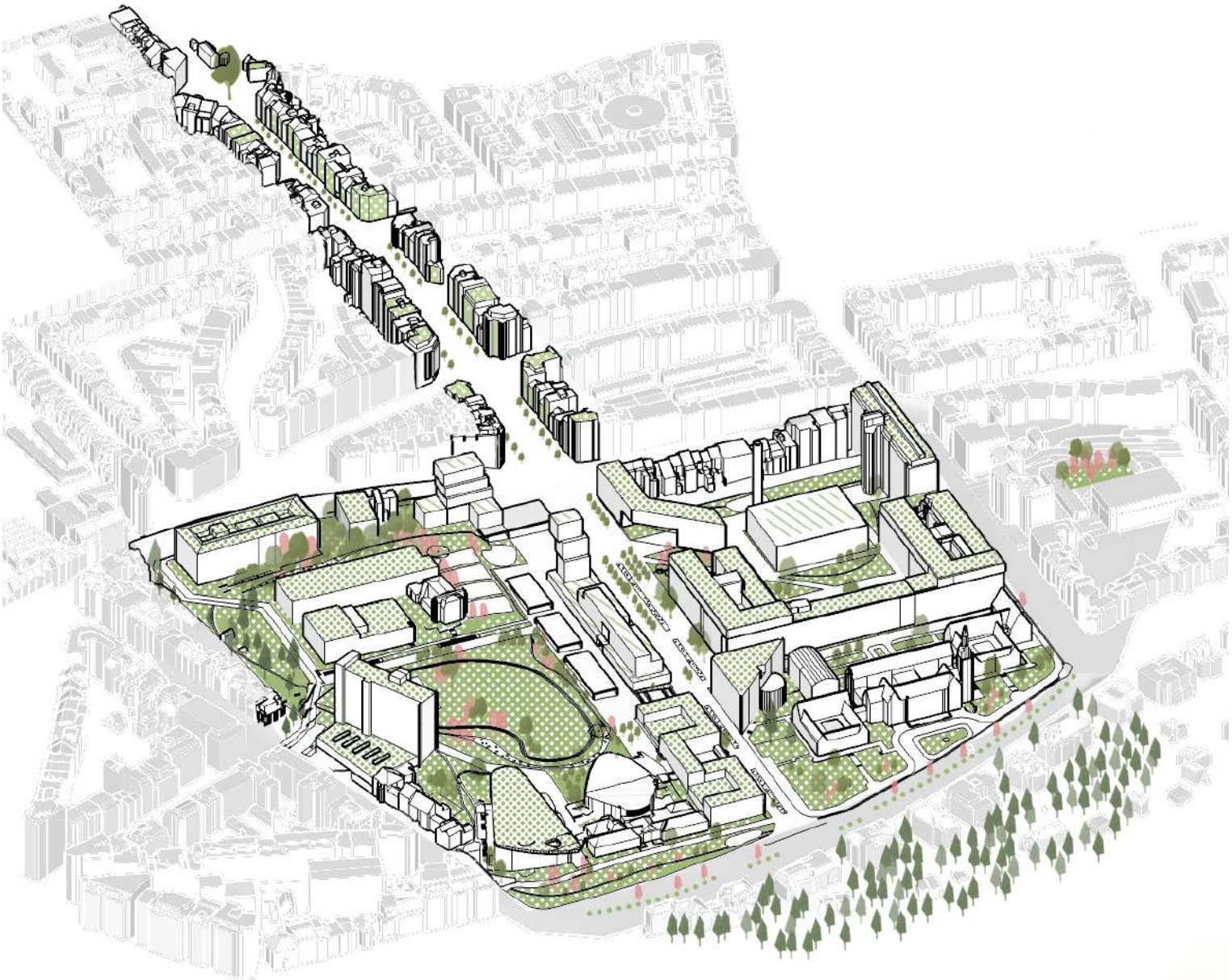

03

Avenue Buyl

Avenue Depage

Avenue de L'universite

View over the BUD



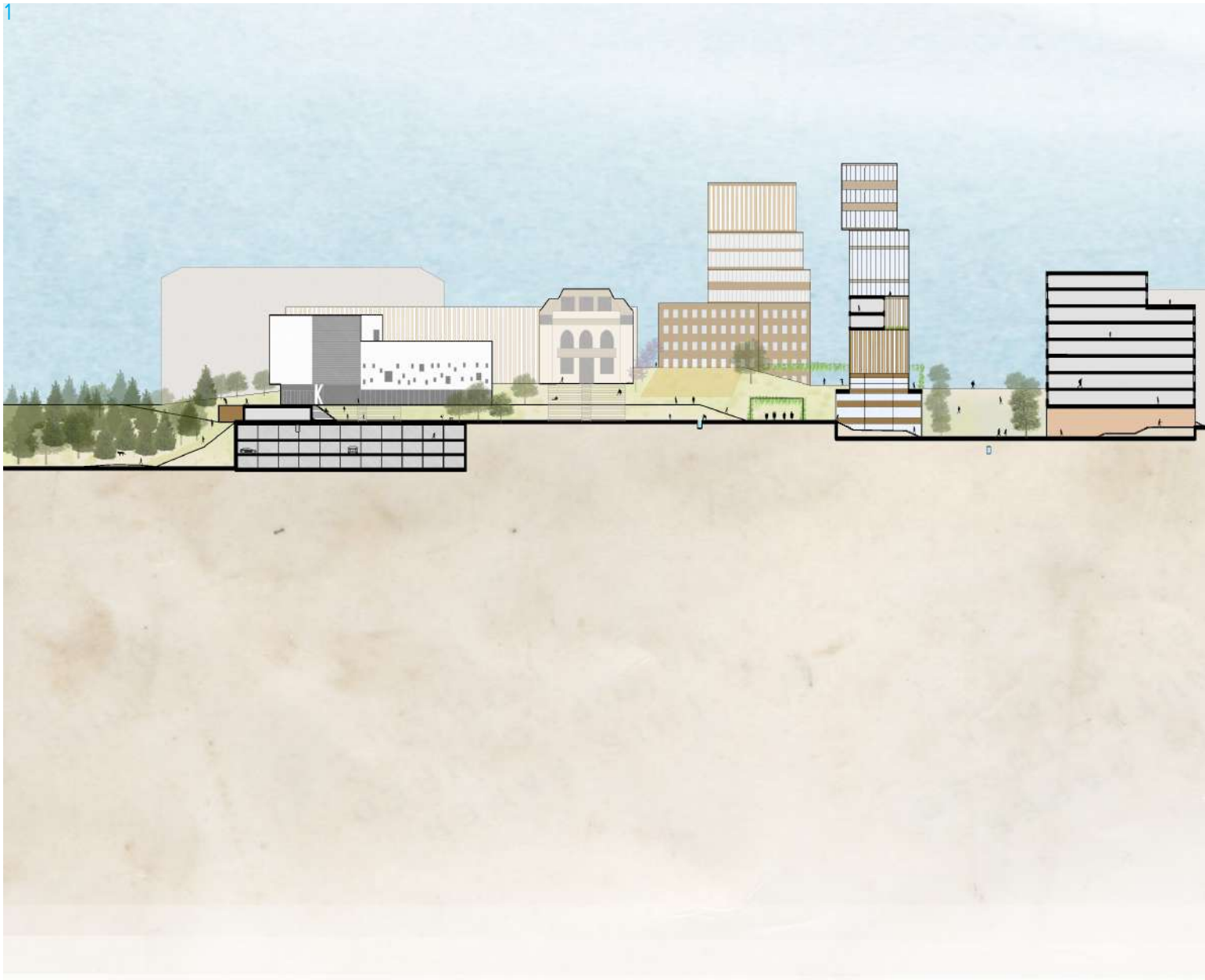
The University of the Future is the best example of a regenerative metabolism. On every level, the well-being of people, animals and plants is put forward in an integrated and regenerative way. The nature-inclusive campus invites a reinterpretation of learning in a University. The learning setting is different, students now interact with each other more than ever but also with the environment around them and participate in an inter-species symbiosis.

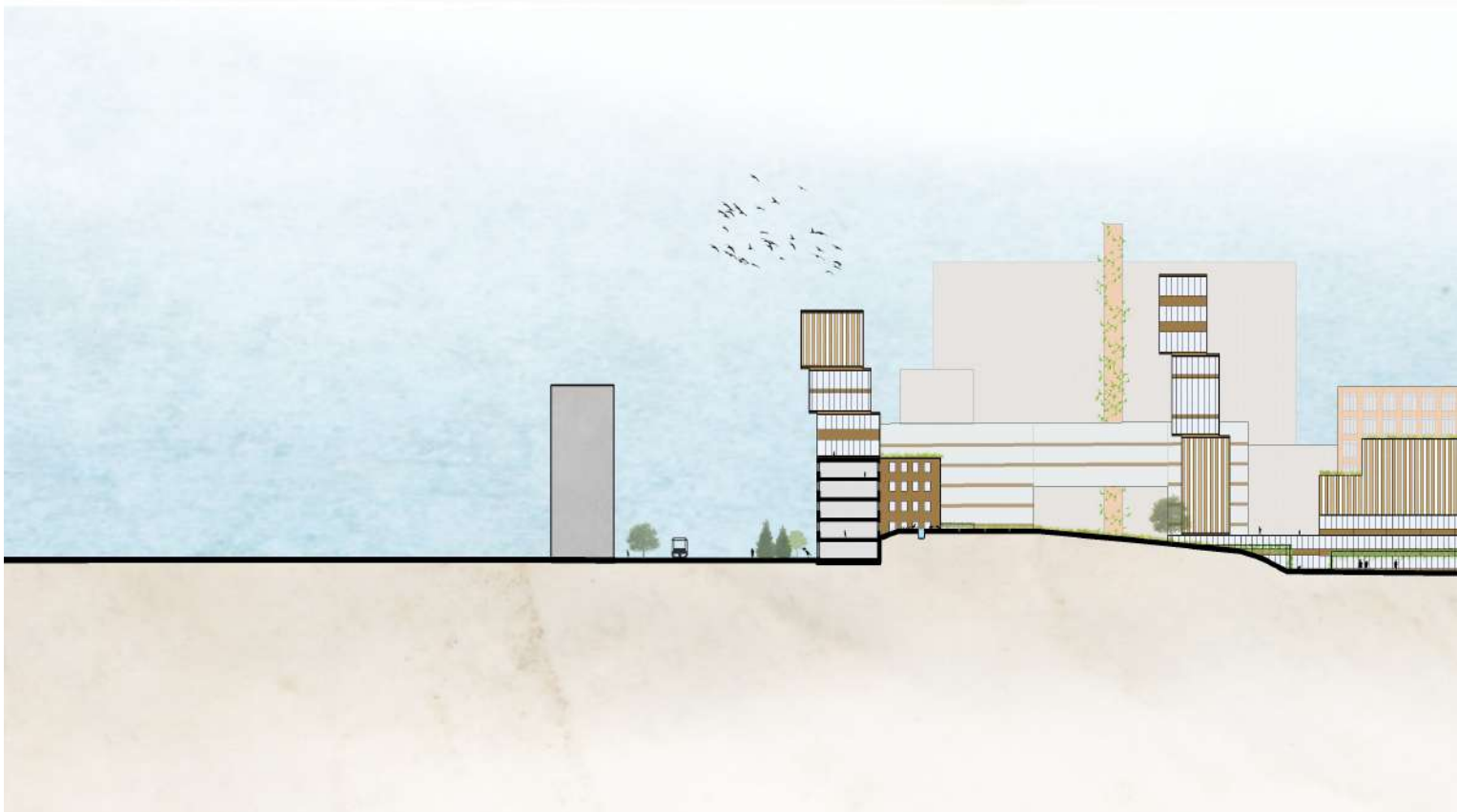
The Solbosch campus of 2030 is designed for pedestrians and encourages social interaction according to sanitary measures whether indoors or outdoors. The richly diverse population interacts with students of all horizons in large communal spaces available on all the ground floors, two steps away from outdoor green spaces where historical landmarks give rhythm to the vibrant student folklore. These parks are no longer residual, they structure the campus and are home to a rich biodiversity of vegetal and animal species. This natural environment ensures the well-being of all species and takes part in the building strategy of the vision by growing wood for future constructions.

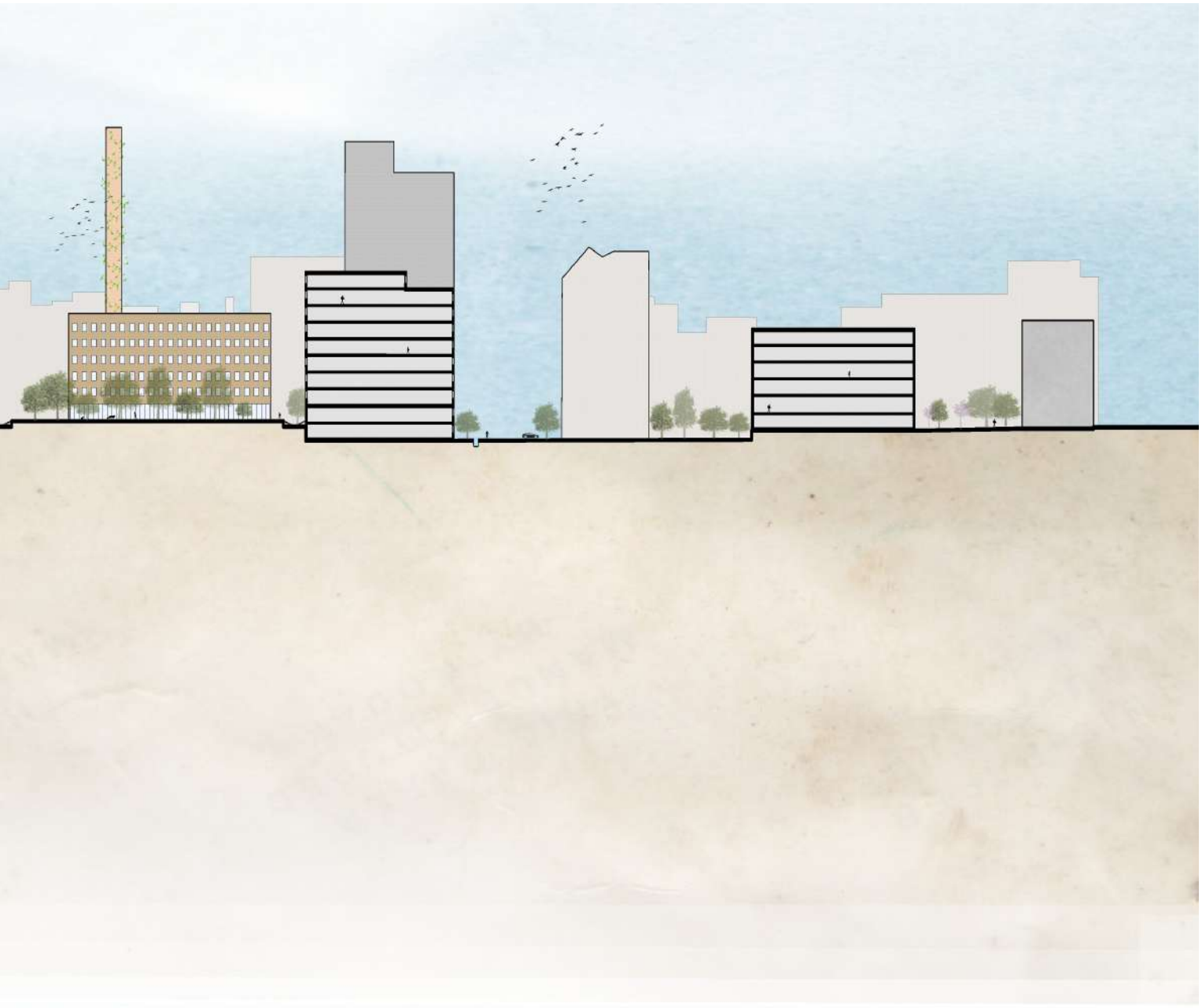
In this reborn University, all needs are met by the regenerative metabolism

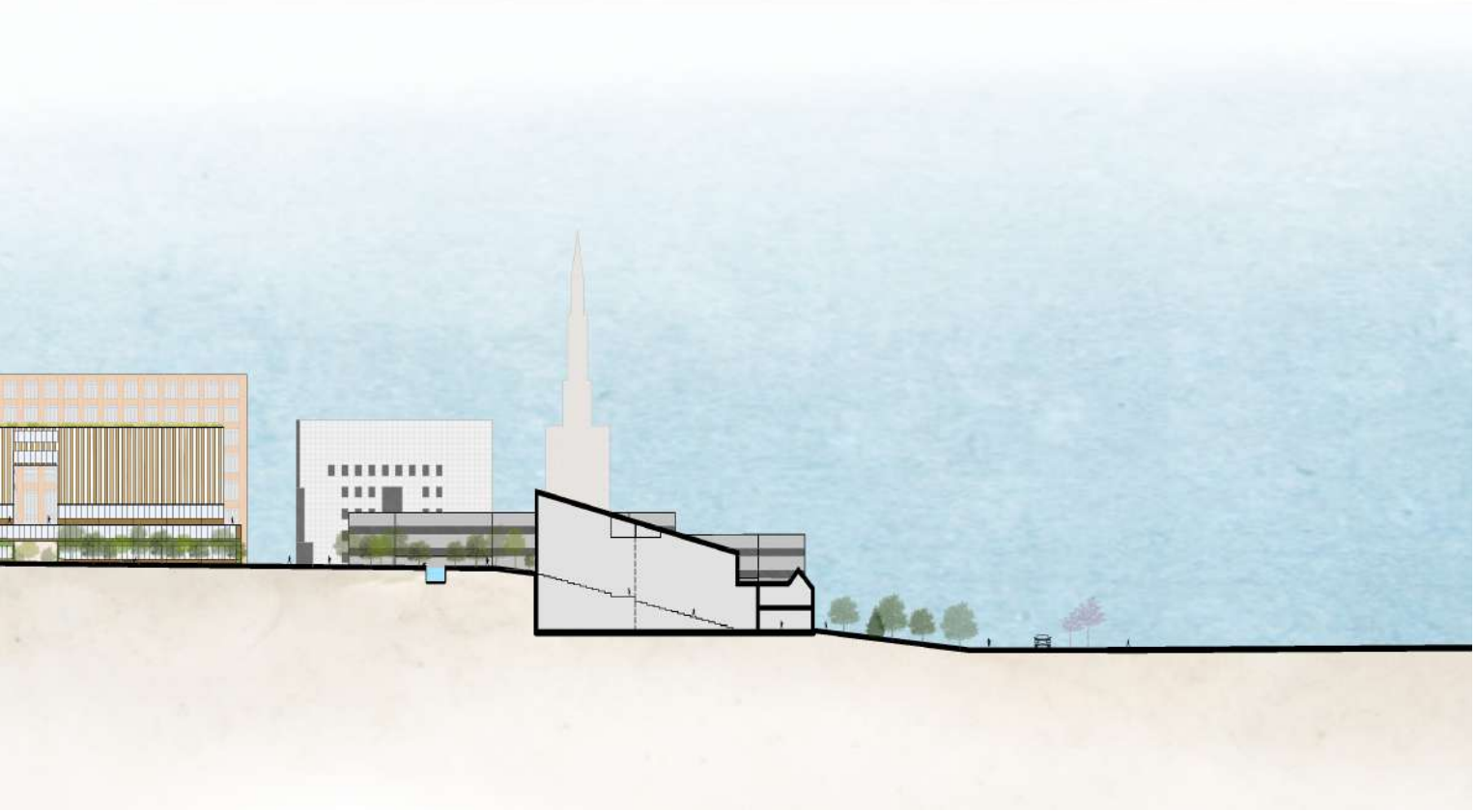
Rainwater is collected and used on either green or farming roofs supporting the local food production. The surplus flows to the new water stream going all around the campus symbolizing the closed-loop of regeneration. The flow reaches a waterfall where a microturbine generates enough electricity to maintain the uphill flow of the stream. The energy surplus is reinjected into the grid of the campus and joins the green electricity produced by the solar panels and geothermal means. The last energy source is the biomass coming from the food production consisting of seasonal fruitful trees, vegetables, produced on land or on roofs. There, the rainwater is collected again, completing the circle and the cycle starts again. This is Rebirth.

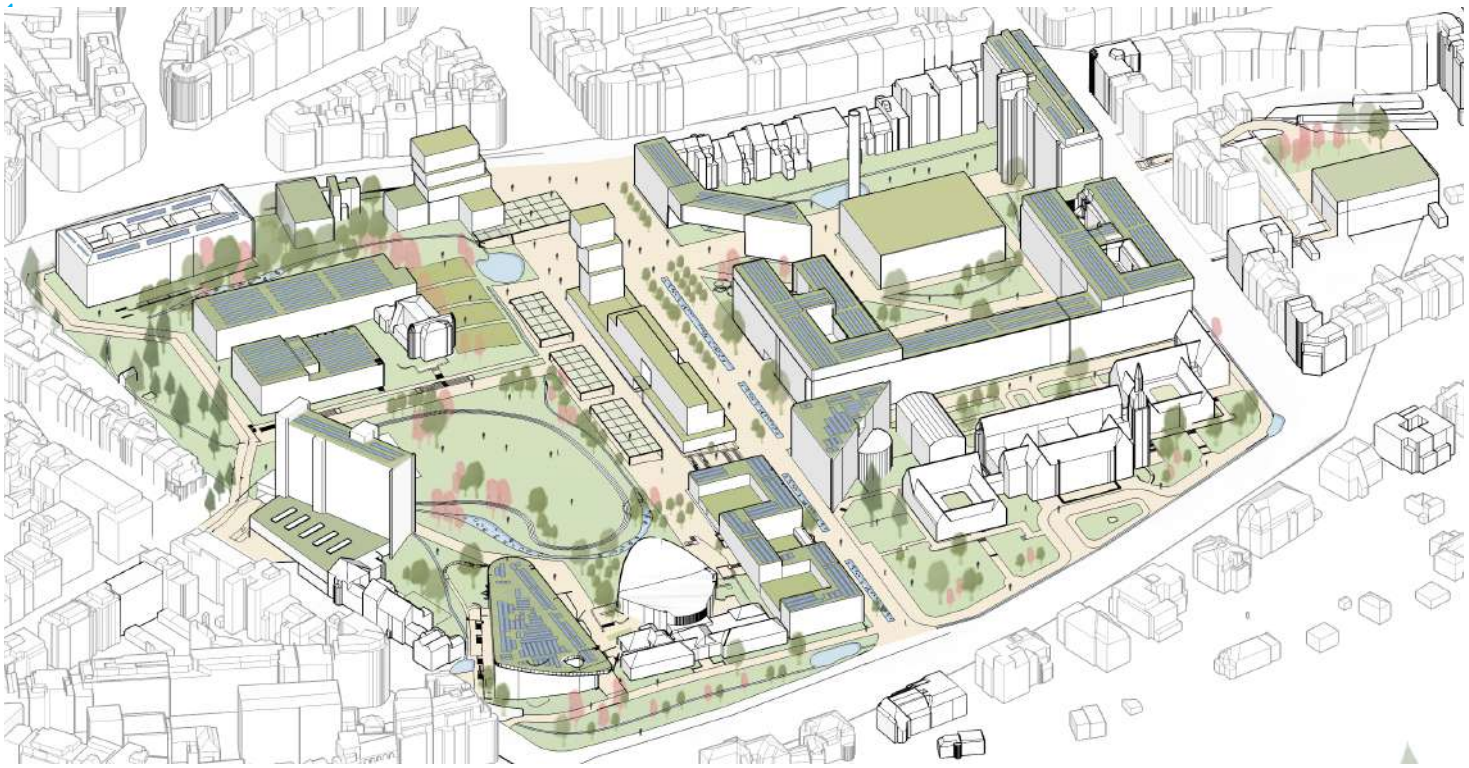
1

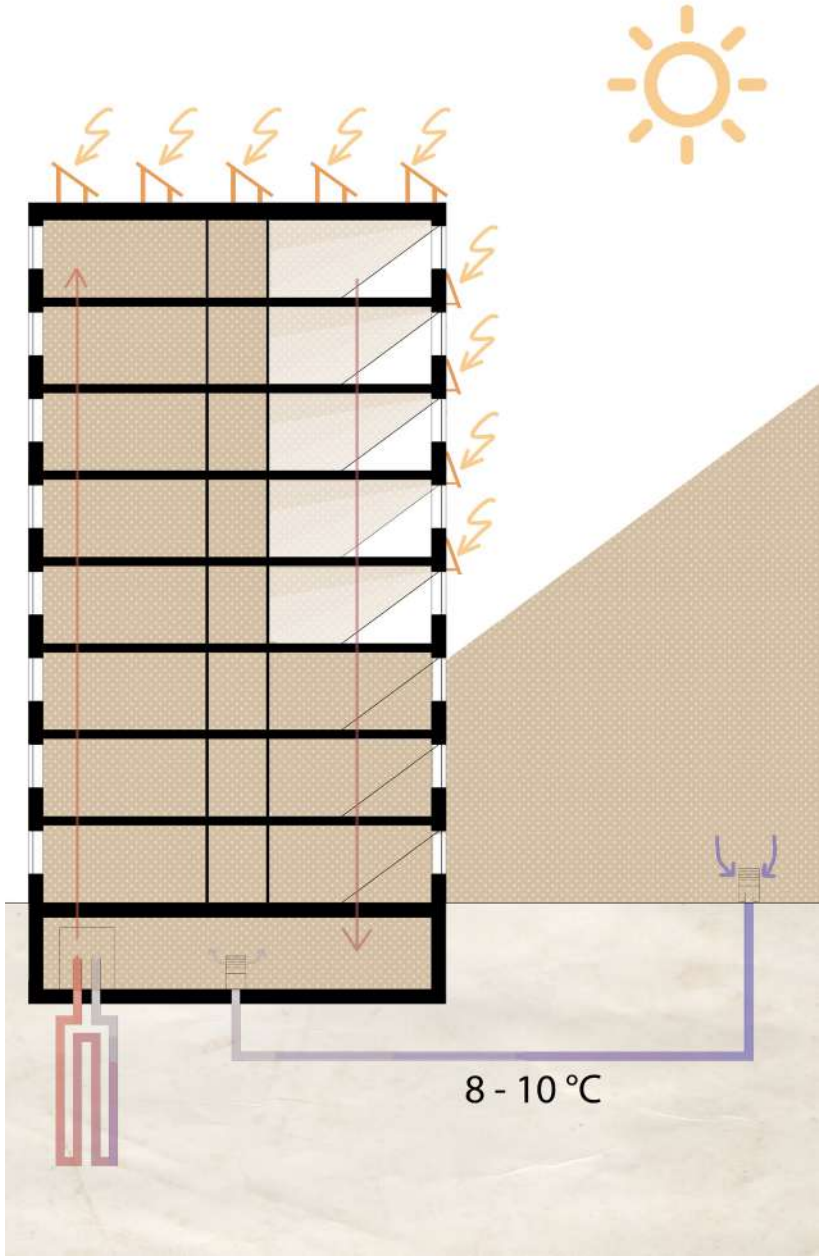








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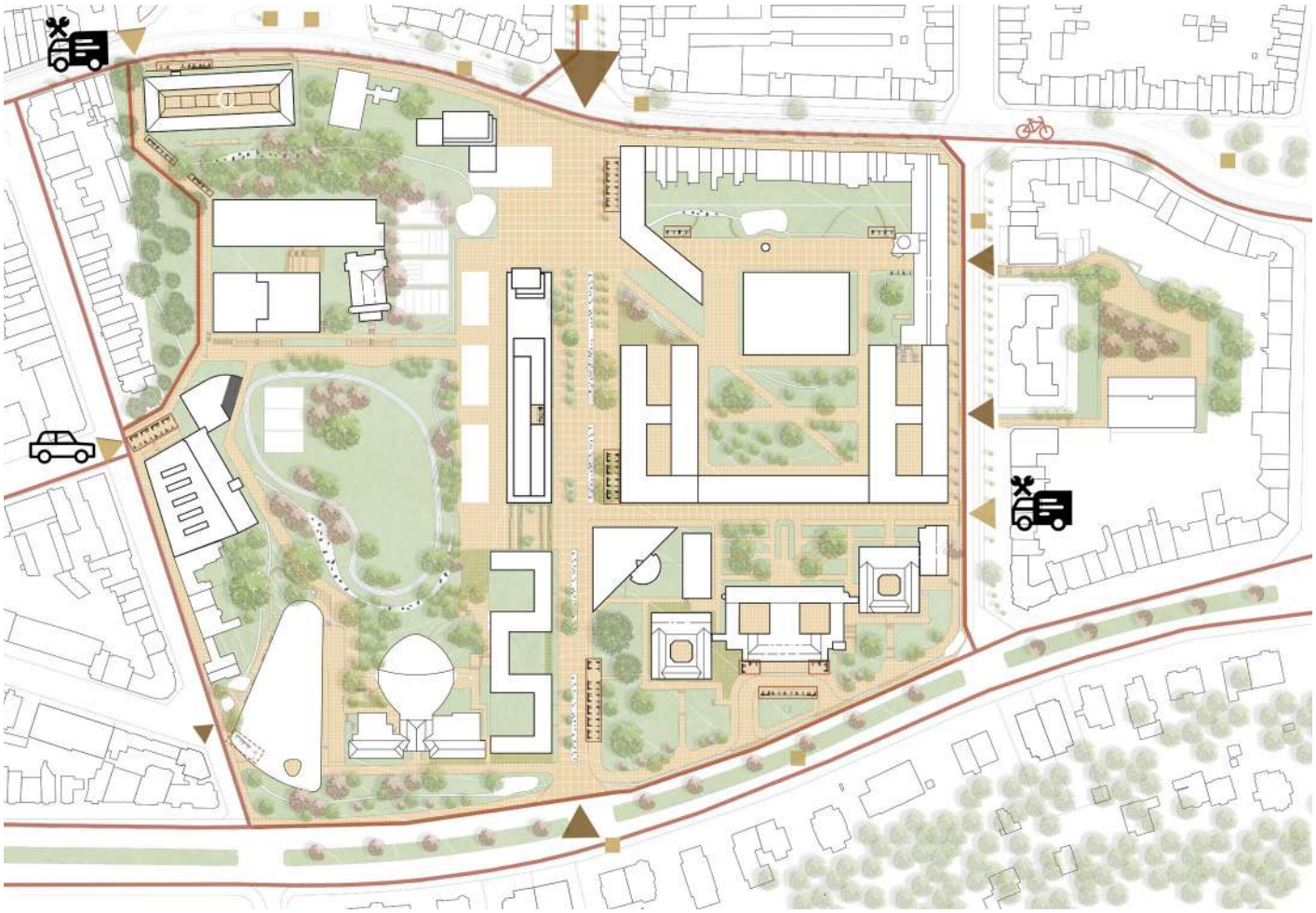

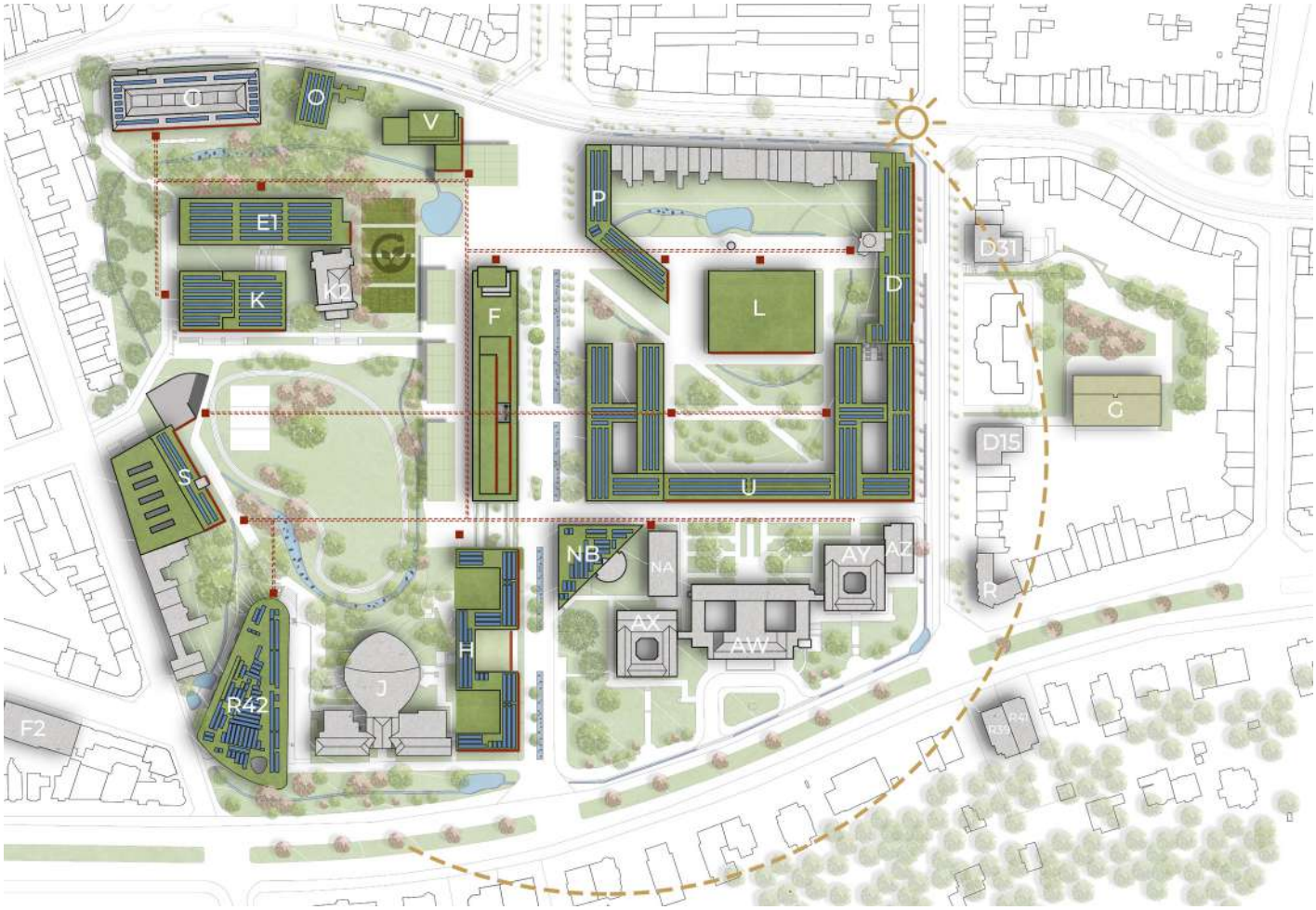
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P24

OPEN BOOK

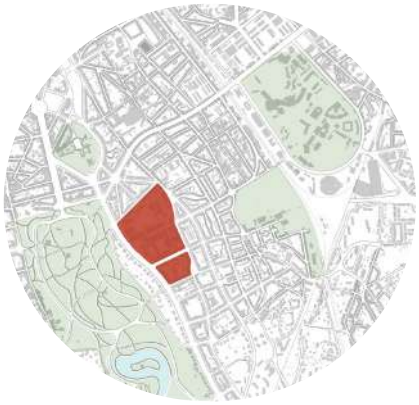
TEAM:
ALAN ZECIROVIC, FAINA SALEEM, HANA TAHERAZAR, SARA OULD BOUYA, VIVIANA CAPASSO &
WILLEM MEVIS


04

1.

CONTEXTUAL

CONTEXTUAL

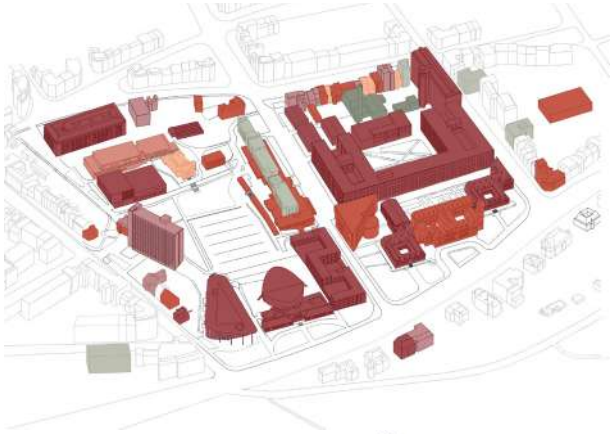


SOCIO – CULTURAL

HISTORICAL

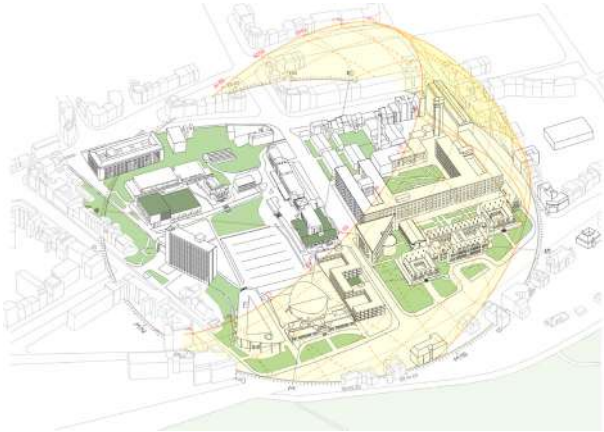
- 1920–1950
- 1953–1958
- 1965–1971
- 1992–2016
- Classified buildings

SPATIO – ECONOMIC



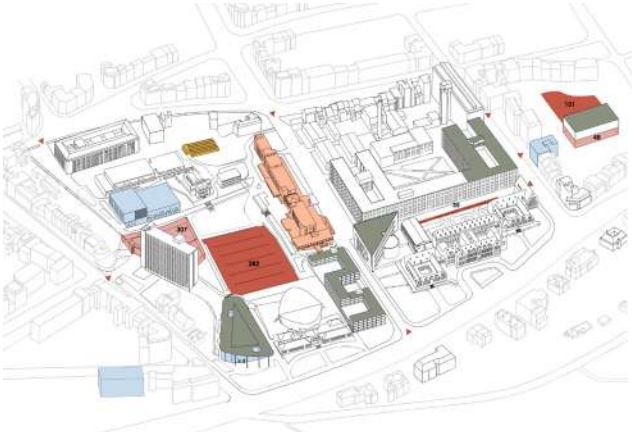
- ACADEMIC (53%)
- ADMINISTRATION (20%)
- CPMMUNITY SERVICES (9.3%)
- SPORT (3.7%)
- HOUSING (13%)
- TECHNICAL (1%)
- NO FUNCTION

HISTORICAL



IMPERMEABLE SURFACES (40%)	FRAGMENTED, DISHAMONIOUS
GREEN SURFACES (22%)	LACK OF LANDSCAPE DESIGN AND BIODI-VERSITY, NOT ENOUGH AREA
GREEN ROOFS (9% OF TOTAL ROOF SURFACES)	NOT DESIGNED FOR PUBLIC USE OR LOCAL PRODUCTION, LACK OF INTENSIVE OR SEMI-INTENSIVE GREEN ROOFS

SPATIO – ECONOMIC



	MOBILITY	661 OPEN SPACE & 542 UNDERGROUNG CAR PARKING
	ENERGY	6.39% OF ELECTRICITY & 3.63% OF GENERAL ENER-GY BY SOLAR PANELS
	WATER	1724 m^3 RAINWATER COLLECTION (6.6%)
	FOOD	800 m^2 GREENHOUSE
	WASTE	MAIN SOURCE OF ORGANIC WASTE

1. ANALYSIS

2.

UNIVERSITY OF FUTURE:

- SELF - SUSTAINABLE
- INTERACTED WITH NEIGHBORHOOD
- BROAD RANGE OF EXPERIENCE

BOOK:

- PRODUCES KNOWLEDGE
- CATEGORIZES CONTENT
- COHESION AMONG CHAPTERS
- VARIOUS NROAD RANGE OF CONTENT

OPEN BOOK:

- EXPERIENCE DIFFERENT ASPECTS OF DAILY LIFE
- BENEFICAL FOR DISTRICT
- AS SUSTAINABLE AS POSSIBLE

Located in the heart of multi-national and academic district, Solbosch Campus has a rich potential to accomplish the characteristics of a futuristic university. Considering the continuous changes in educational approaches, it should fulfill more than mere academical requirements.

In our imagination, a university of future has lots of similarities with a book which provides distinctive, categorized pieces of information. A self-sustainable environment which can interact with surrounding neighborhood and actively contribute to the betterment of local population and student's lifestyle. A book provides knowledge, vision, and maybe a unique way of thinking, which was the inspiration of naming our project since we attempt to design a university that also engages with daily aspects of student's lifeand leading them to create new way of thinking.

Our ambitions to create such environment are as follows:
1. Defining three different zones of open spaces based on the adjacent condition.

2. Having a car-free campus, considering the environmental sustainability circumstances.

3. Spatial response to the highly increasing number of students.

4. On-campus organic food production in order to enrich the local production culture.

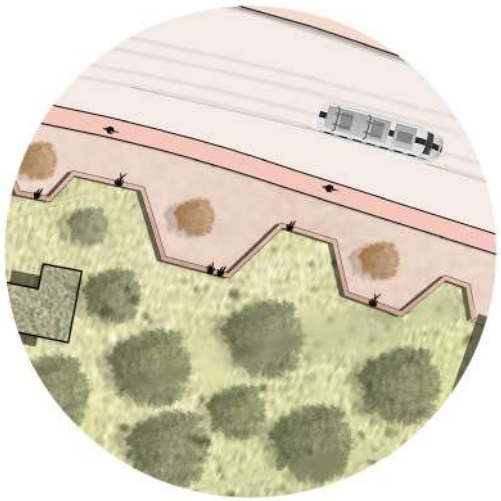
5. Designing a bridge to demonstrate a unique spatial experience of connectivity.

Providing new cultural and sportive areas alongsideenhancing the relation of campus with the neighborhood were part of our priorities during the spatial programming of our project. Inspired by the nearby well-known natural spots, providing a green campus able to provide renewable energy resources was one of our approaches during the design process. To conclude, our target is to finally accomplish a campus in which not only the essential demands of its own are provided by itself, but also the requirements of students and local people are taken care of.

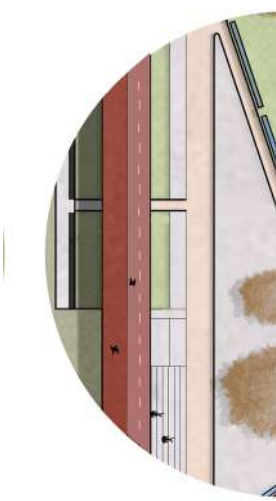
2. VISION

3.

A. BOARDERS



B. AVENUE PAUL HÉGER

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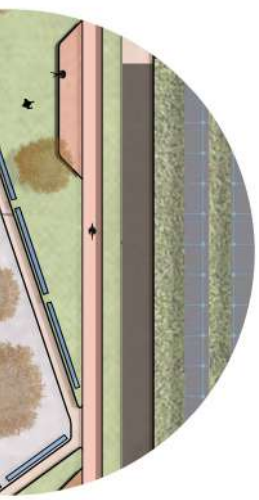
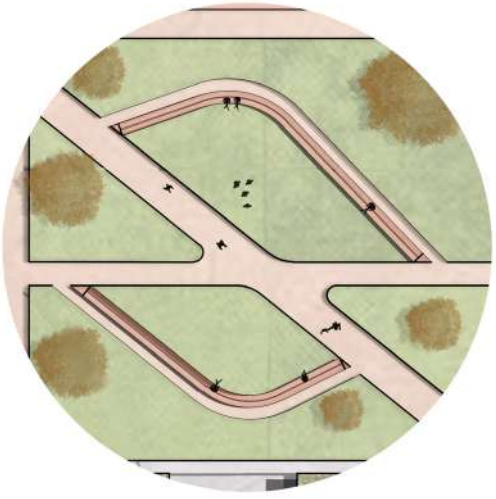
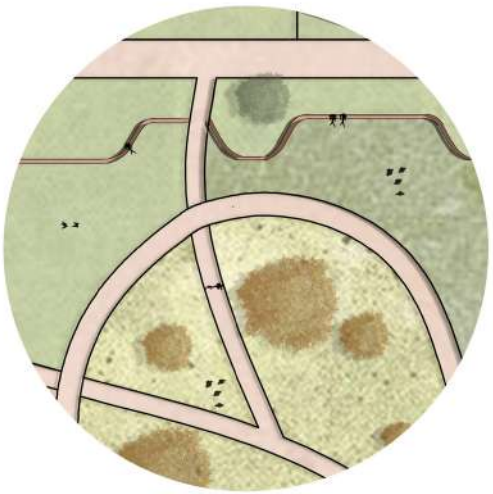


C. P SQUARE



4.

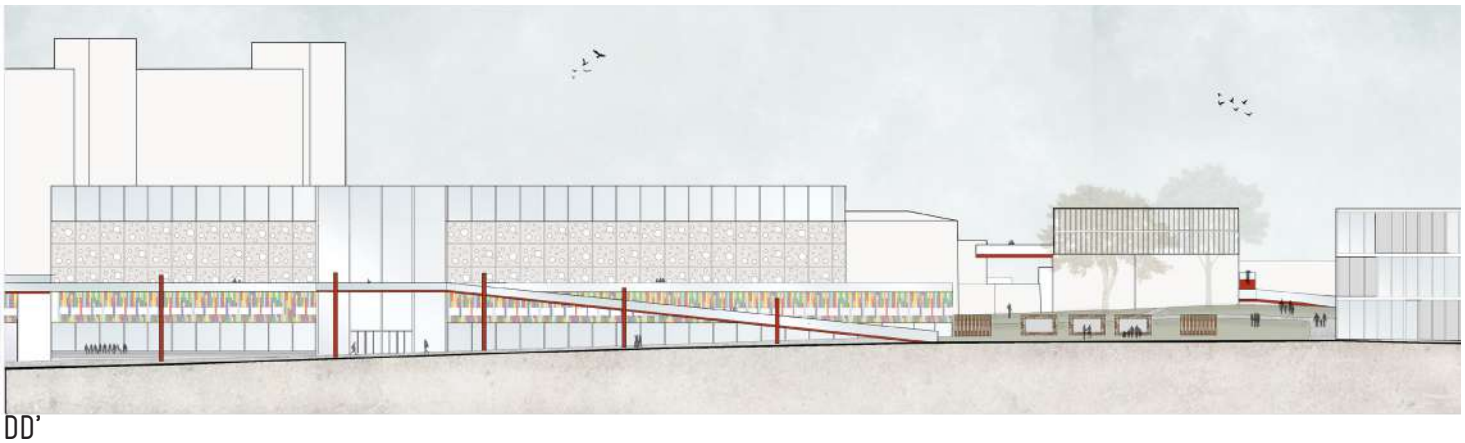
D. PUBLIC PARK



4. GROUNDFLOOR PLAN

E. PRIVATE ZONE

5.



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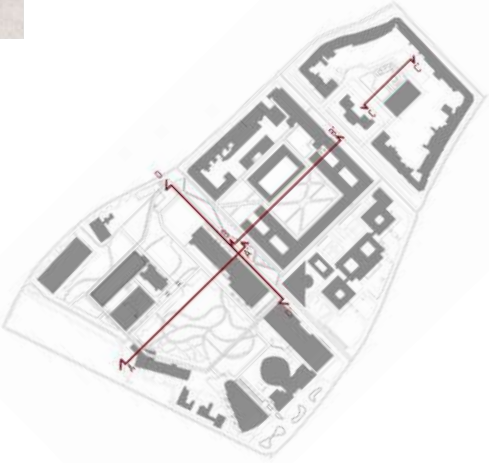

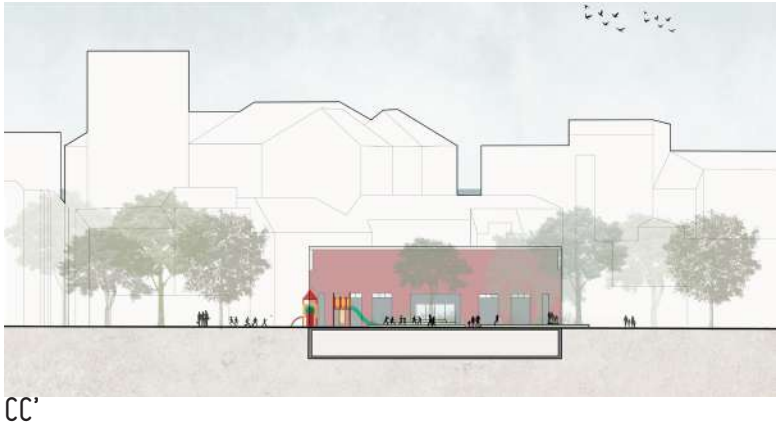

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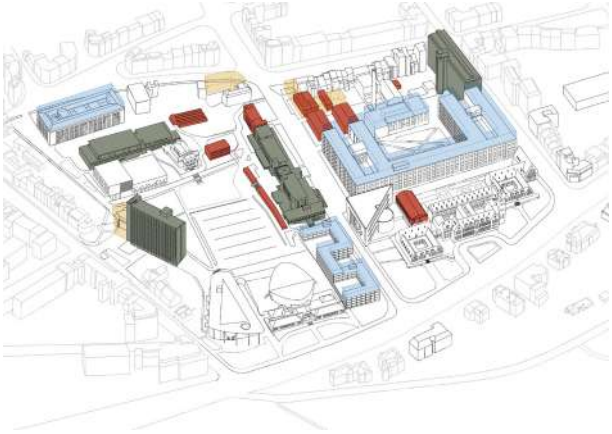
5. SECTIONS

6.

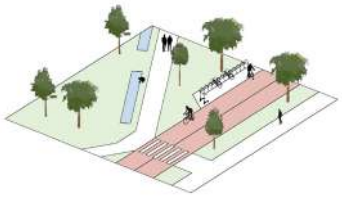
1. SPATIAL RESPONSE



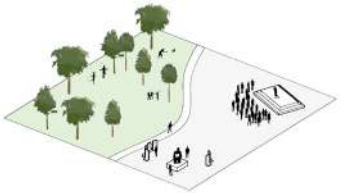
DEMOLITION
RENOVATION
BUILD UP
ADDITION

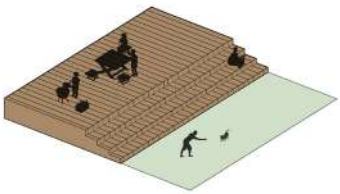
+ 67 6400 m²
+ 6900 m²
+ 31 100 m²
+ 9600 m²

2. MOBILITY

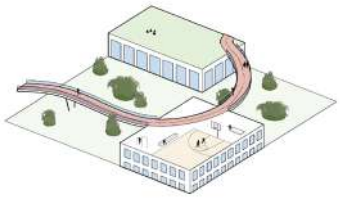


3. FUNCTION

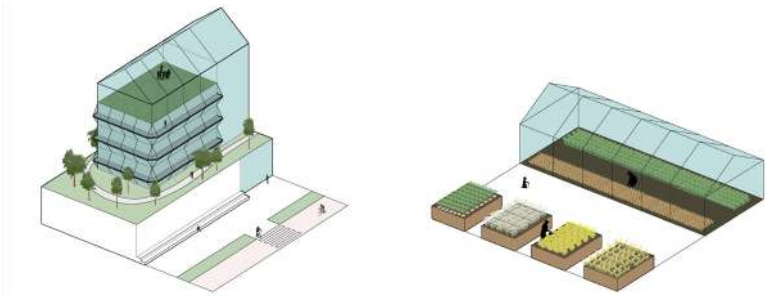




4. INTERACTION OF MOBILITY AND FUNCTION

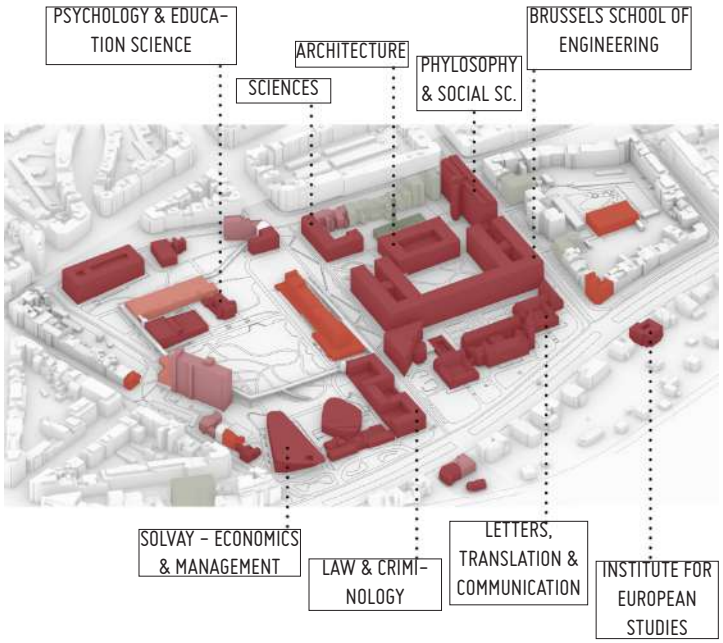


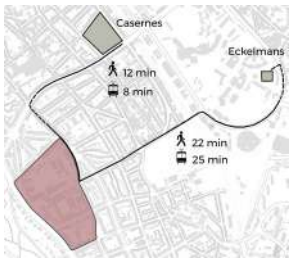
5. ENVIRONMENTAL SUSTAINABILITY



6. GOALS

1. SPATIAL RESPONSE

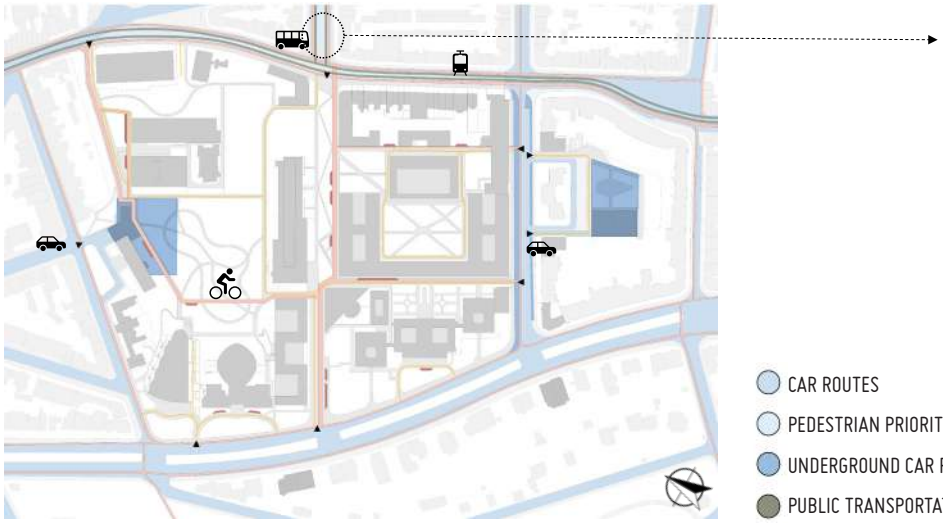




- ACADEMIC
- ADMINISTRATION
- CPMMUNITY SERVICES
- SPORT
- HOUSING
- TECHNICAL

	HOUSING	
+141 %	EXISTING	20 963 m^2
	CASERNES	18 000 m^2
	ECKELMENS	11572 m^2
	TOTAL PER PERSON (2893 STUDENTS)	18 m^2
	ACADEMIC	
+63.5 %	EXISTING	106 000 m^2
	ADDED	67 370 m^2
	TOTAL PER PERSON	7.5 m^2
	SPORT	
+135 %	EXISTING	7 122 m^2
	ADDED	9 631 m^2
	TOTAL PER PERSON	4.5 m^2
	SOCIETAL (COMMUNITY)	
+73 %	EXISTING	9 473 m^2
	ADDED	6 980 m^2
	TOTAL PER PERSON	0.68 m^2

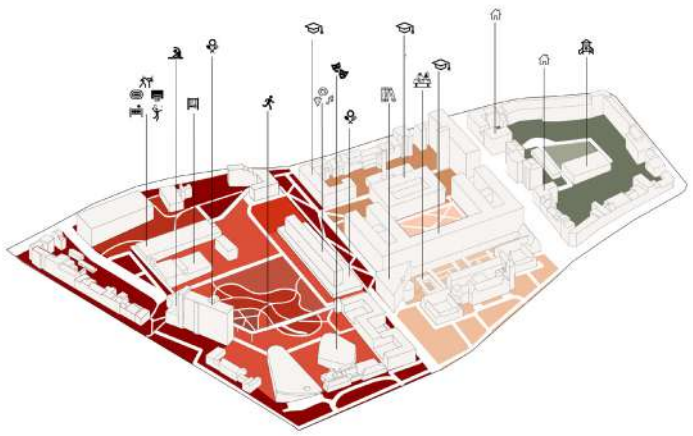
2. MOBILITY: CAR FREE CAMPUS



UNDERGROUND CAR PARKING SPOTS	EXISTING: 1203 PROPOSITION: 643
BICYCLE PARKING SPOTS	EXISTING: 512 PROPOSITION: 660

- CAR ROUTES
- PEDESTRIAN PRIORITY
- UNDERGROUND CAR PARKING
- PUBLIC TRANSPORTATION
- BICYCLE ROUTES
- BICYCLE PARKING
- SERVICES & FIRE TRUCKS

3. FUNCTION: ACTIVE, RELAX, PRIVATE ZONES



ACTIVE ZONE:

- ENRICHING STUDENT'S LIKE REGARDING HEALTH & SOFT SKILLS
- AVAILABLE FOR PUBLIC
- LOCAL PRODUCTION

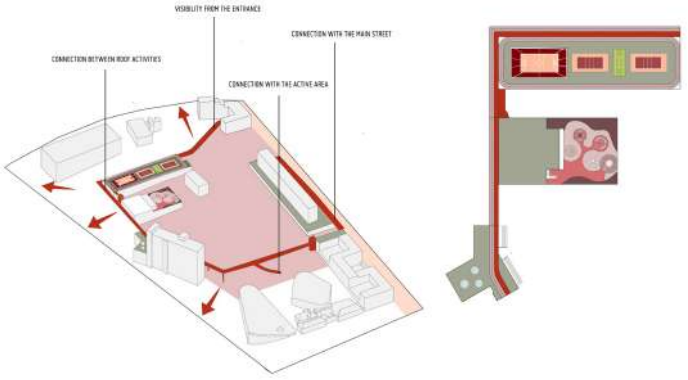
RELAX ZONE:

- GROUP STUDIES, BRAINSTORMING
- CHESS FACILITIES IN OPEN SPACE

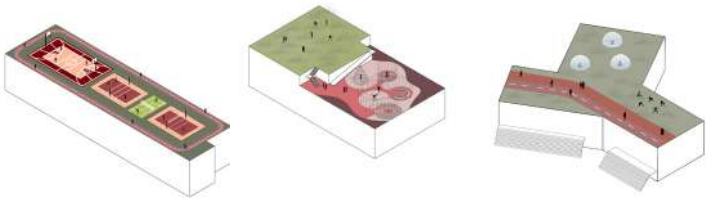
PRIVATE ZONE:

- LEISURE OF CHILDREN AND STUDENTS
- REPROGRAMMING THE UNDERGROUND PARKING IN FUTURE

4 & 5. FUNCTION & MOBILITY: HIGHLINE

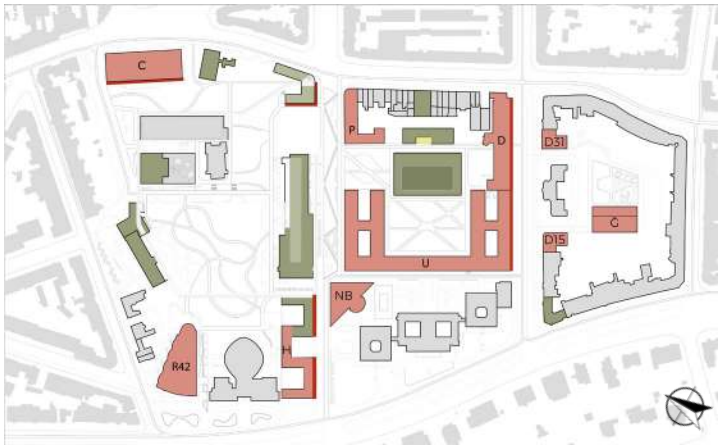


- ACTIVATING THE ROOFS
- EFFICIENT WAY OF TRANSPORTATION FOR GARDENERS & STUDENTS
- UPCYCLING THE MATERIALS OF DEMOLISHED BUILDINGS (PREFABRICATED BUILDINGS)



6. ENVIRONMENTAL SUSTAINABILITY

ENERGY



SOLAR ELECTRICITY PRODUCTION = **+31%**

EXISTING SOLAR PANELS	720 000 kWh/y	6.36% ELECTRICITY
SOLAR PANELS & SOLAR WINDOWS (PREPOSITION)	4 250 000 kWh/y	37% ELECTRICITY

- SOLAR PANELS - GREEN ROOF
- SEMI INTENSIVE GREEN ROOF
- VERTICAL FARMING
- INTENSIVE ROOF
- SOLAR WINDOWS
- CENTRAL BOILER

WATER MANAGEMENT

RAINWATER COLLECTION

ROOF BUILDINGS	26 137 m^3/y

- RAINWATER COLLECTION ON ROOFS
- NATURAL WATER STORAGE

LOCAL PRODUCTION & BIODIVERSITY

LOCAL PRODUCTION

1	FRUIT PRODUCTION	4733 m^2
2	VERTICAL FARMING	1500 m^2
3	VEGETABLE PRODUCTION	2206 m^2

SOLBOSCH CAMPUS SPACES

TOTAL CAMPUS AREA	162 680 m^2	
BUILDING COVER AREA	56 484 m^2	36%
SEMI PERMEABLE	3 854 m^2	2%
IMPERMEABLE PAVEMENT	9 855 m^2	6%
TOTAL GREEN ARE	92 022 m^2	56%

3D VIEW OF SOLBOSCH CAMPUS

1. ENTRANCE BUILDING

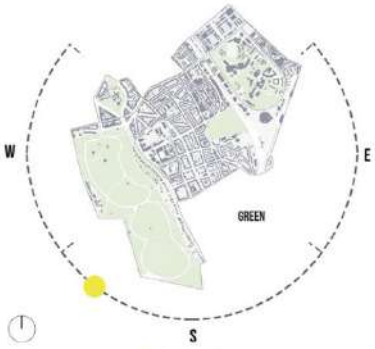
2. VIEW FROM THE BRIDGE

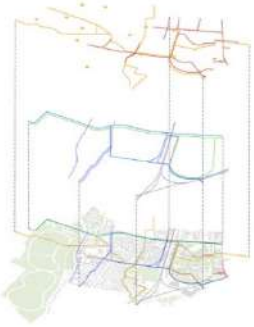
3. RELAX ZONE

ECONVERGENCE

TEAM:
SAJEDEH A.AMIRI – ISMAIL AFAILAL – AMBER DEHAEN – FAEZEH HAJIBAGHERI – ELLEN LEEMANS – GABRIELLE NICOLAS


05





OPEN SPACE FRAMEWORK
WELL-DEFINED OPEN SPACES
CONNECTIONS
TOPOGRAPHY

MOBILITY
FRIENDLY ENVIRONMENT FOR PEDESTRIANS, JOGGERS & CYCLISTS
UNDERGROUND PARKING

PROGRAM
ADD FUNCTIONS TO ENLIVEN CAMPUS LIFE
CAMPUS FOR STUDENT & NEIGHBORHOOD
+ 20% + 20%

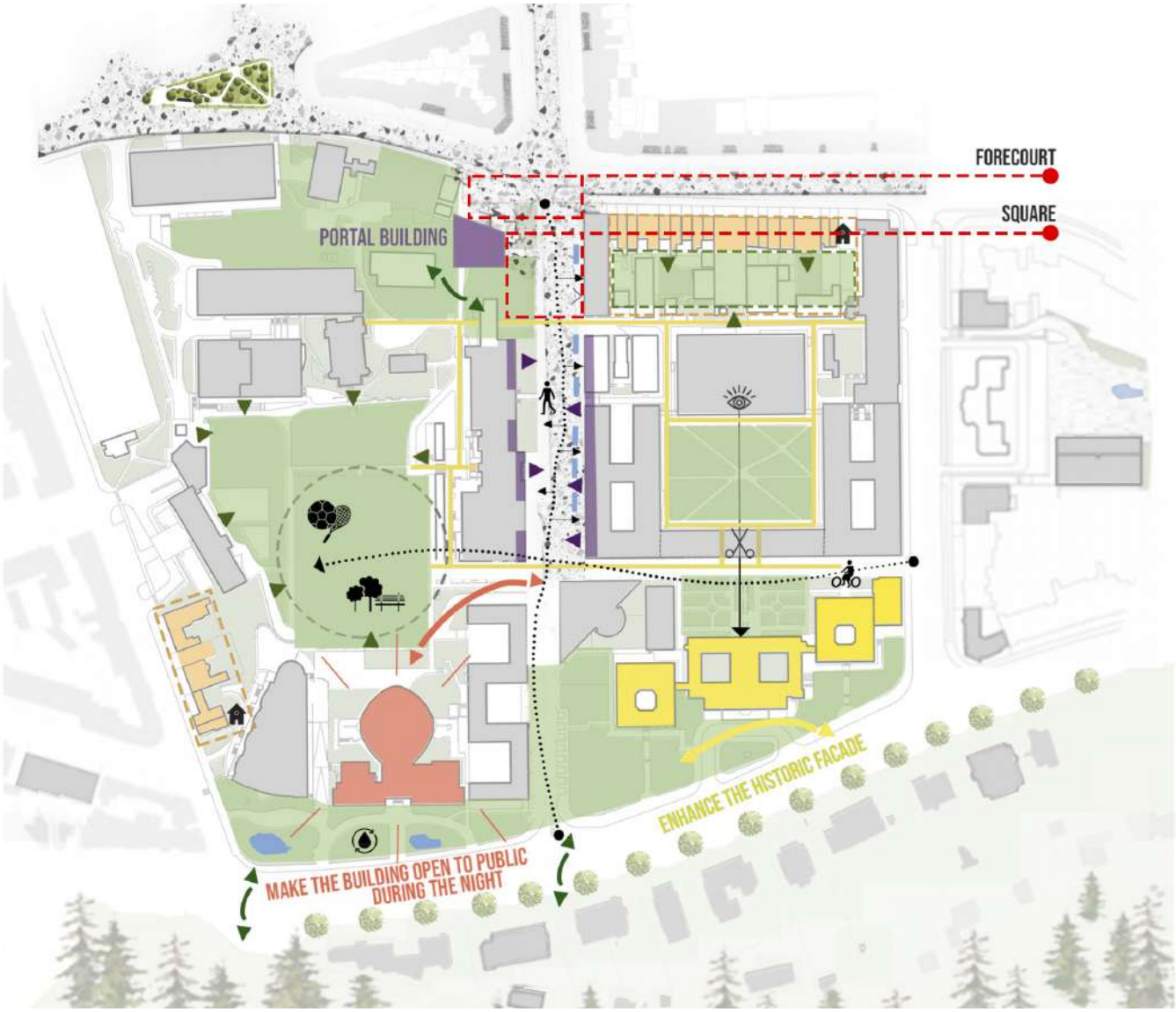
SUSTAINABILITY
WATER BASINS
GREEN ROOFS
RESPOND TO TOPOGRAPHY
SOLAR PANELS
ORIENTATION OF BUILDINGS
IMPERMEABLE SURFACE
- 25%

With our project 'ECONVERGENCE' we want to present the Solbosch campus as a sustainable university for the future that is linked with the city. To achieve this goal, we focus on two scales in our design, namely the Brussels University District and the Solbosch campus scale.

When analysing the first scale, we notice that the axis between the Solbosch campus and the VUB and ULB Plaine campus has a huge potential to create the link between both universities. By extending the existing commercial axis near the cemetery of Ixelles, we can make the university more open to the neighborhood. By designing a forecourt and an agora with public and commercial facilities at the entrance of the campus, we want to enliven campus life and create a pleasant environment. To make the square more active, the closed facades of the buildings along the square are more open. At the other side of the campus near the Bois de la Cambre, there is a big heritage to enhance. By working on the gardens in front of the listed buildings, we design a buffer between the busy street and the campus. We improve the open space framework on campus by designing well-defined open spaces that are well connected. For this design, we take the topography of the site and the solar orientation into account.

When discussing the Solbosch campus scale, we can distinguish four main design strategies. First of all, we improve the open space framework on campus by designing well-defined open spaces that are well connected. For this design, we take the topography of the site and the solar orientation into account.

The south-oriented green stairs following the topography at the agora are a nice example of this strategy. Besides that, we design a car free campus to create a pleasant environment for pedestrians, joggers and cyclists. Further on, the program is a very important factor. To accommodate the increasing number of students in the coming years, we add more classrooms, research facilities and student housing on campus. To enliven campus life also during the evenings and weekends, we design public facilities along the square and use the Janson auditorium as a cinema during night. Lastly, we design a sustainable campus by working on the energy, water and food management. Water retention, urban farming, biodiversity and renewable energy are some of the elements that we consider in our design, for both the students as for the neighborhood.

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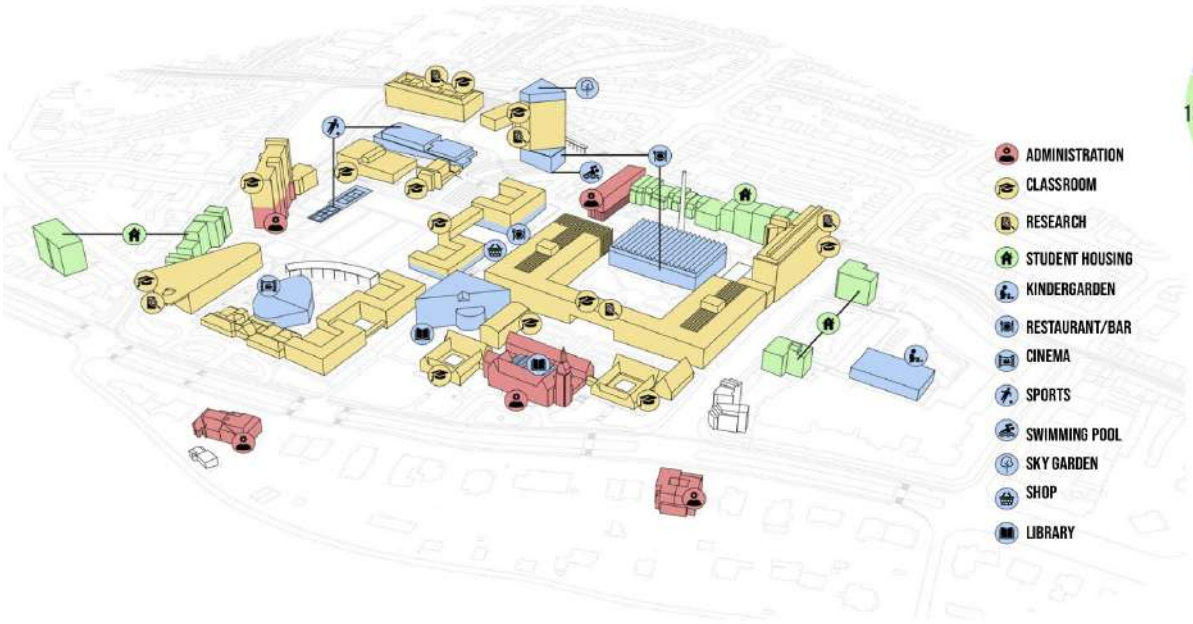
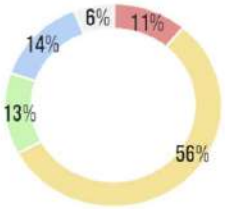




- ADMINISTRATION
- CLASSROOM
- RESEARCH
- STUDENT HOUSING
- KINDERGARDEN
- RESTAURANT/BAR
- CINEMA
- SPORTS
- SWIMMING POOL
- SKY GARDEN
- SHOP
- LIBRARY

WATER

GREEN SPACES
BUILDING
IMPERMEABLE SURFACE
PERMEABLE SURFACE

ENERGY

MID TERM
ON CURRENT BUILDINGS
2 179 319 KWH
HEATING

LONG TERM
ON GREEN ROOFS
2 921 590 KWH
CONSUMPTION

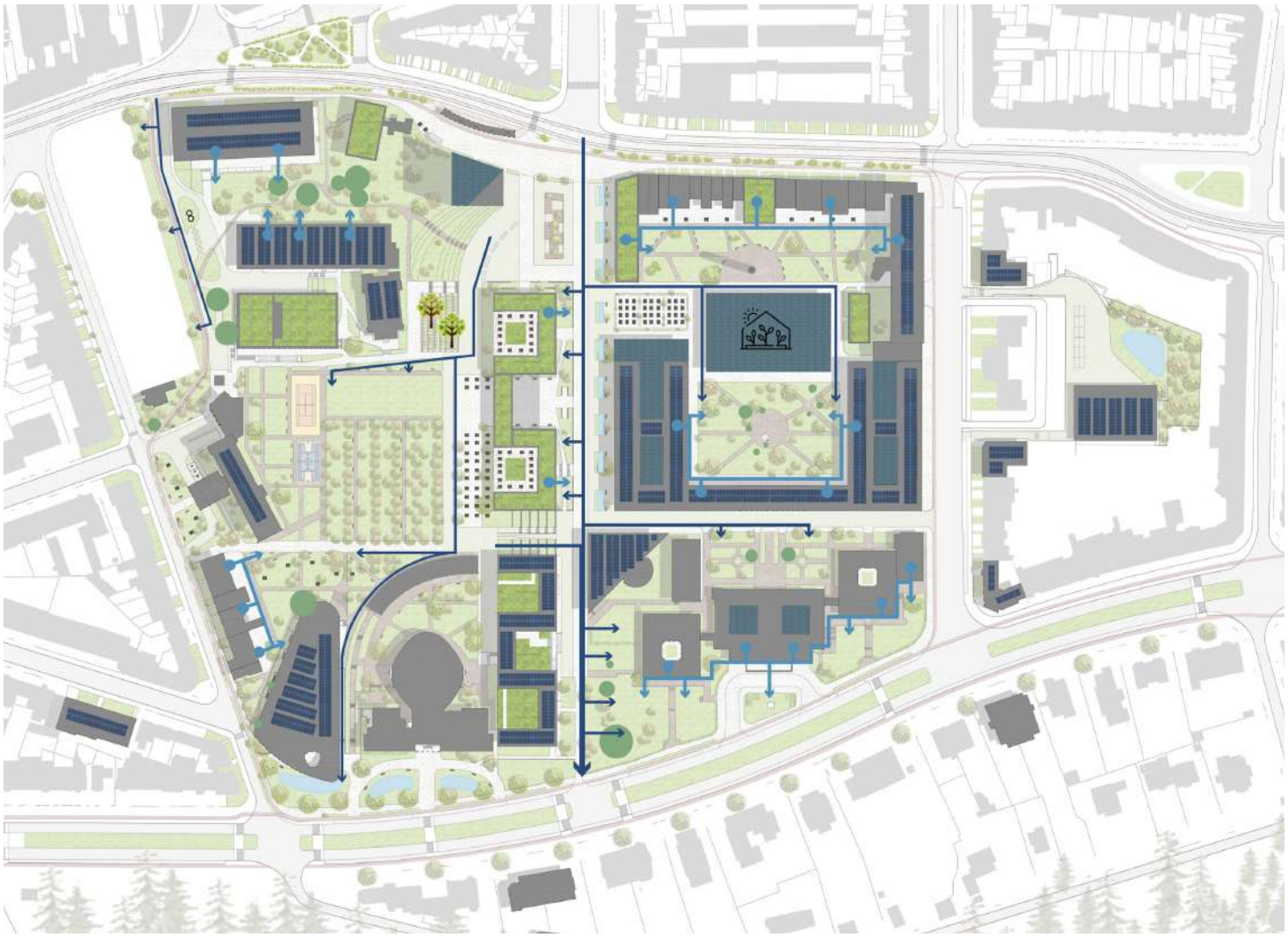
SOLAR PANELS
11 796 893 KWHTH

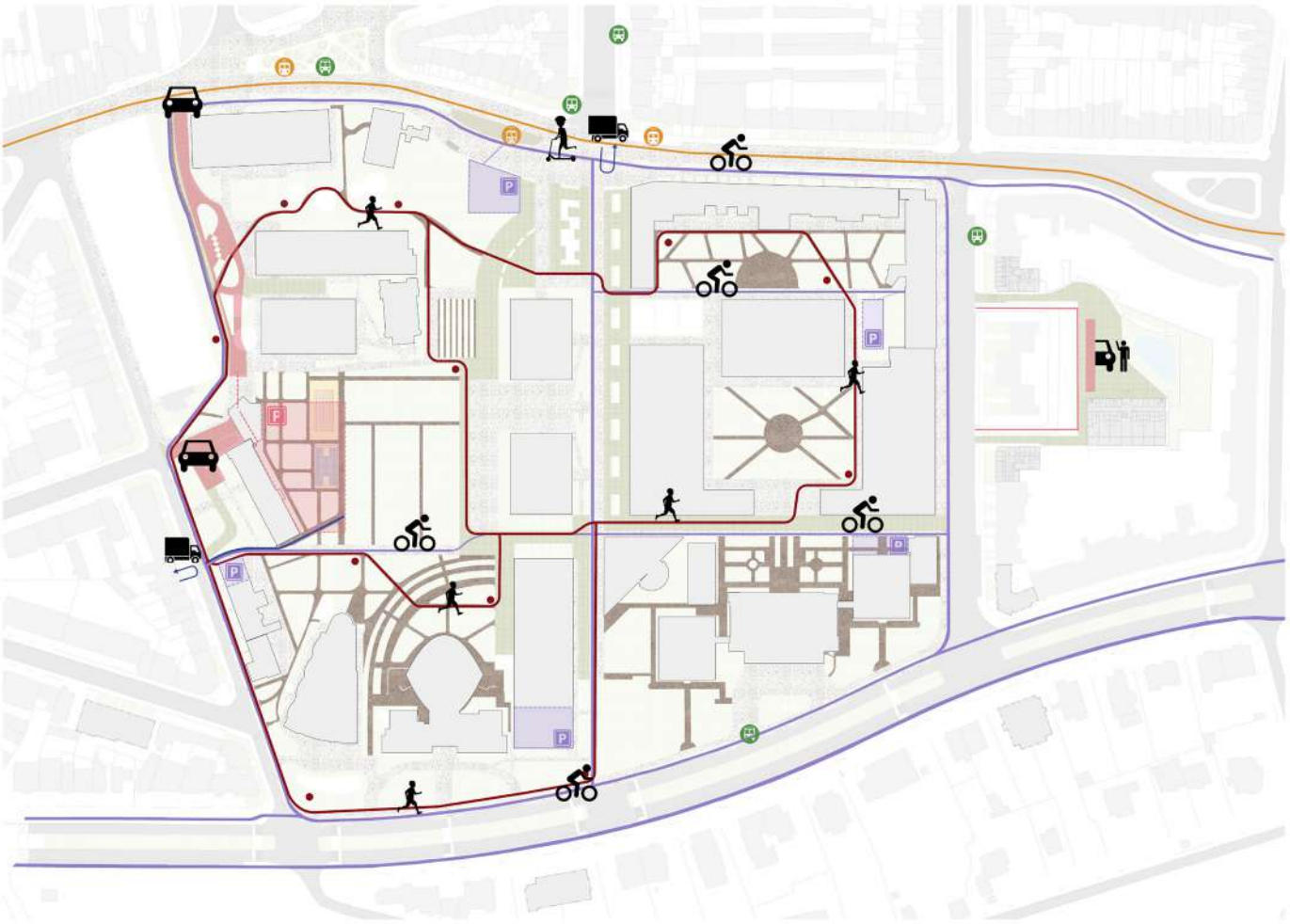
40% REDUCTION OF HEAT CONSUMPTION

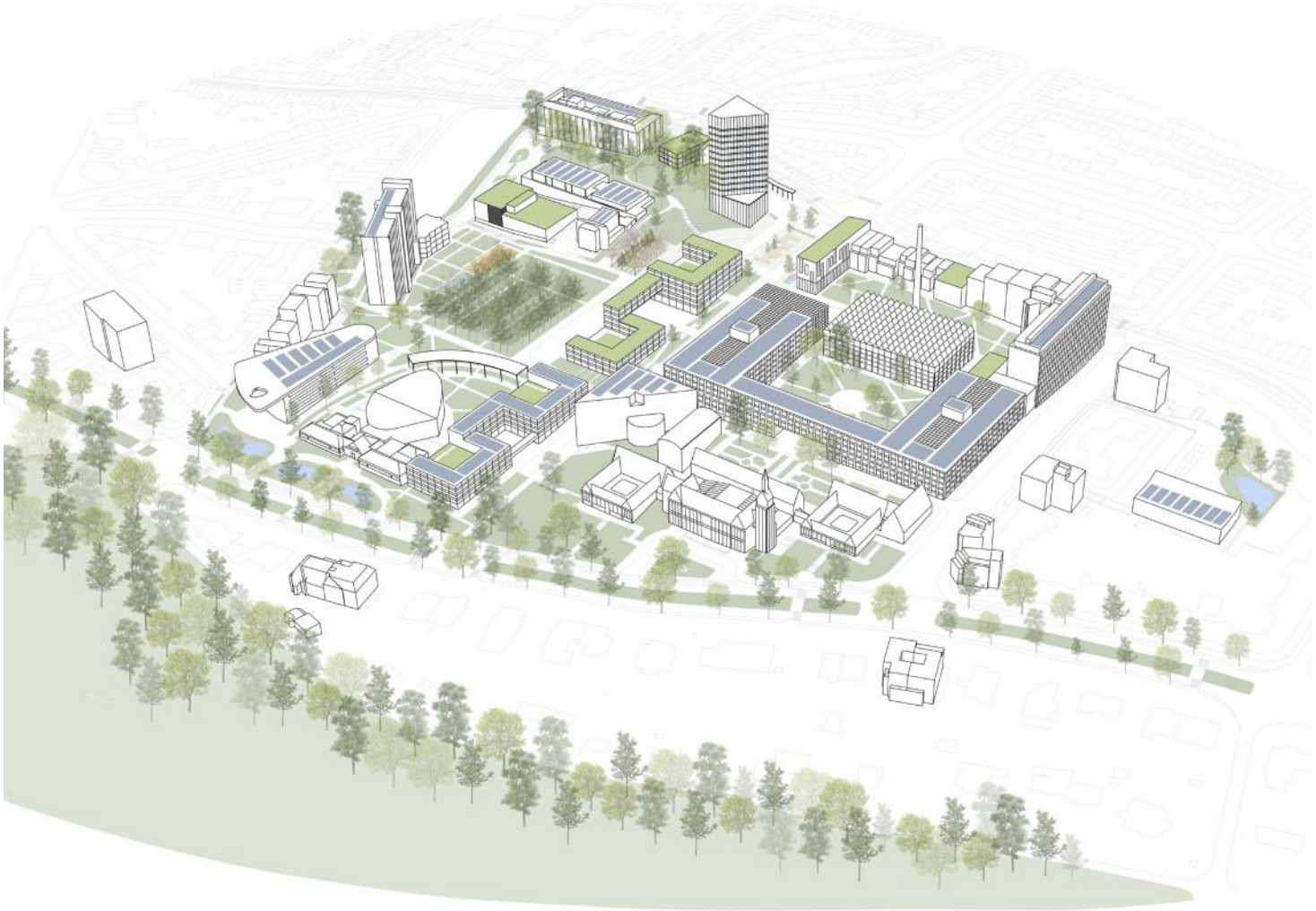
FOOD

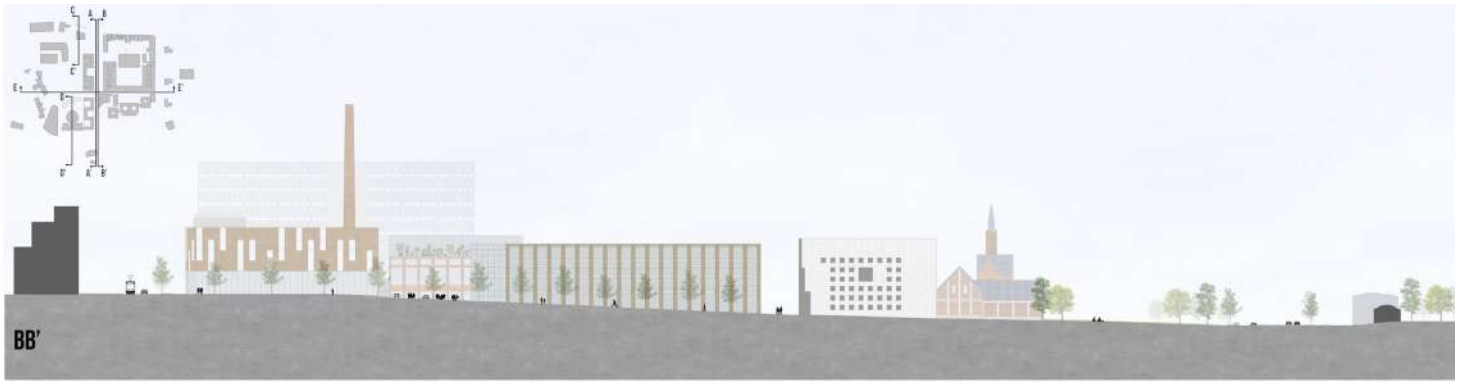
GREENHOUSE
1800 M²
10 692 KG

ORCHARD
96 TREES
1920 KG





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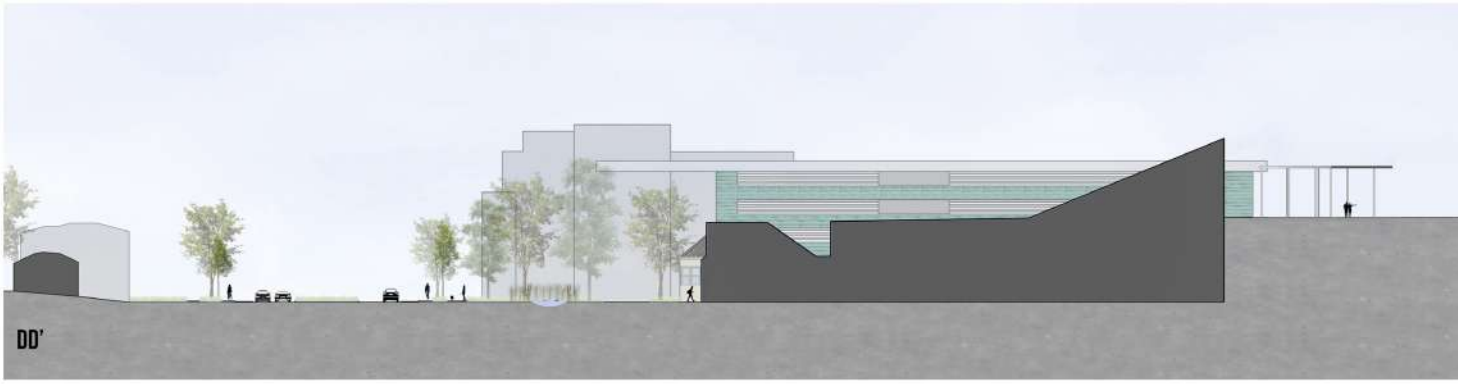
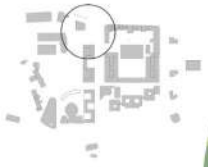

DD'


AA'




Paul Emile Janson

SUSTAINABLE URBAN DESIGN STUDIO, MA-1

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