

architecture **PORTFOLIO** selected academic | professional works

"Being an architect, I am driven by a belief that our profession extends far beyond the confines of design. It is about forging connections that serve the betterment of society. Architects play a pivotal role in guiding cities towards comprehensive sustainability, encompassing social, economic, and environmental development."

-malan llangarathna-

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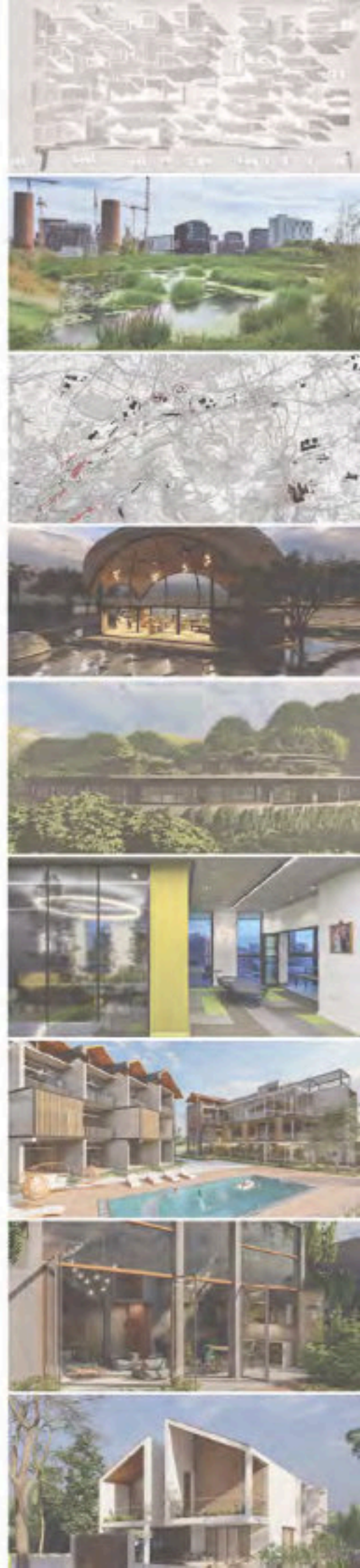
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Personalized Residence

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Personalized Residence



# ROOF AS A NEW LAND *"Foetz of tomorrow"*

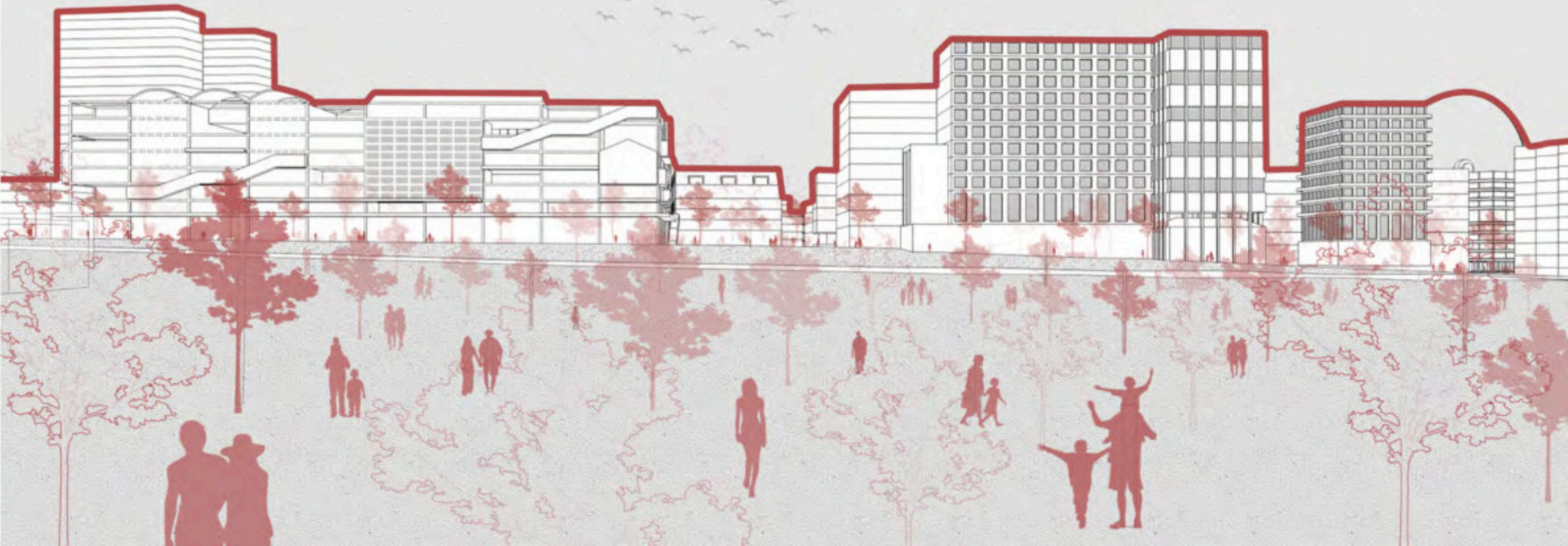
Academic Collective Project  
University of Luxembourg | 2021  
Location - Foetz, Luxembourg

## Urban Development Proposal for Foetz 2050

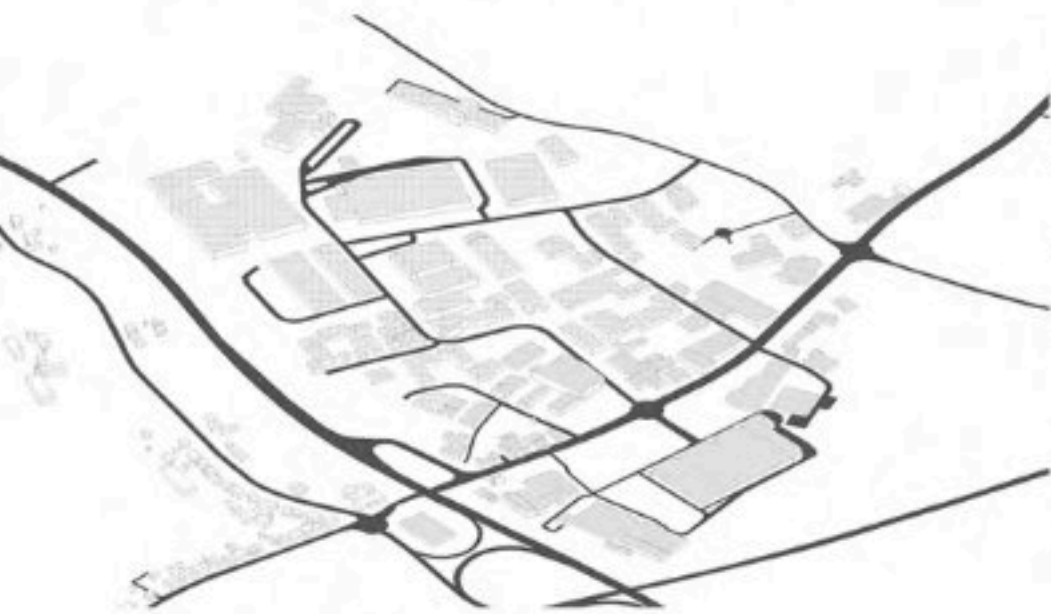
The population of Luxembourg is rapidly growing and is expected to be multiplied by 2050 rising the question of affordable housing. Foetz being a small city located in between the two main cities of the country, Luxembourg and Esch-sur-Alzette, and to be in between the direct line of proposed tram to the southern part of country, the city is expected to be a focal point of urbanization by 2050.

The project explored the existing situation of the urban fabric as the first part which continued in to a possible proposal of urban development considering the large areas of roof as a new land. Around 30% of Foetz land is occupied by the commercial and industrial buildings which are mostly one story buildings with large covering areas of roof. The main objective of the project was to take advantage of these large size roofs and turn an issue in to an opportunity.

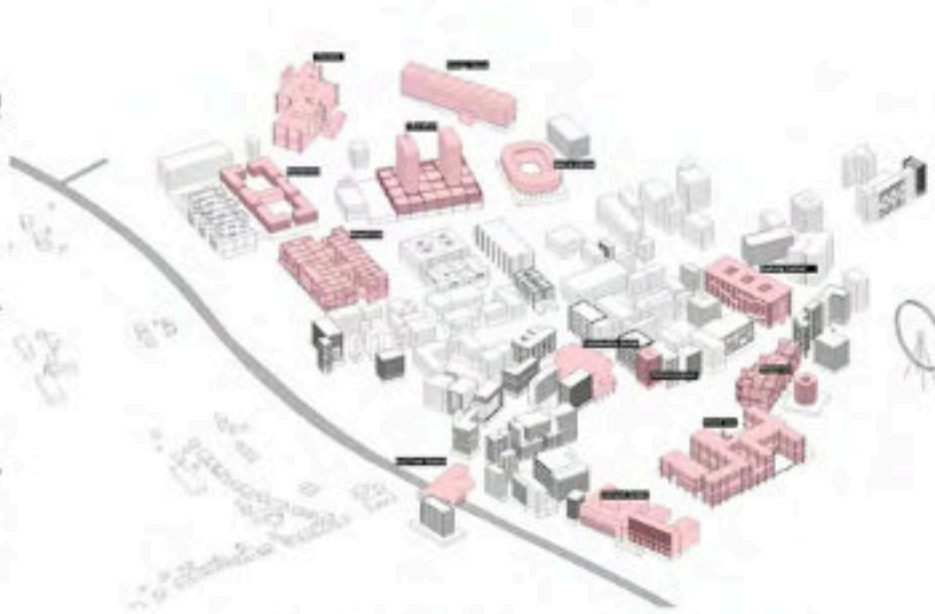
The project aims to continue the growth, the relationship between inside and outside spaces, landscape, and public space. It aims to see the space as a united piece without defining the boundaries not only between spaces, but also functions. The multi functional city of Foetz is expected to accommodate and face the population growth expected by 2050.



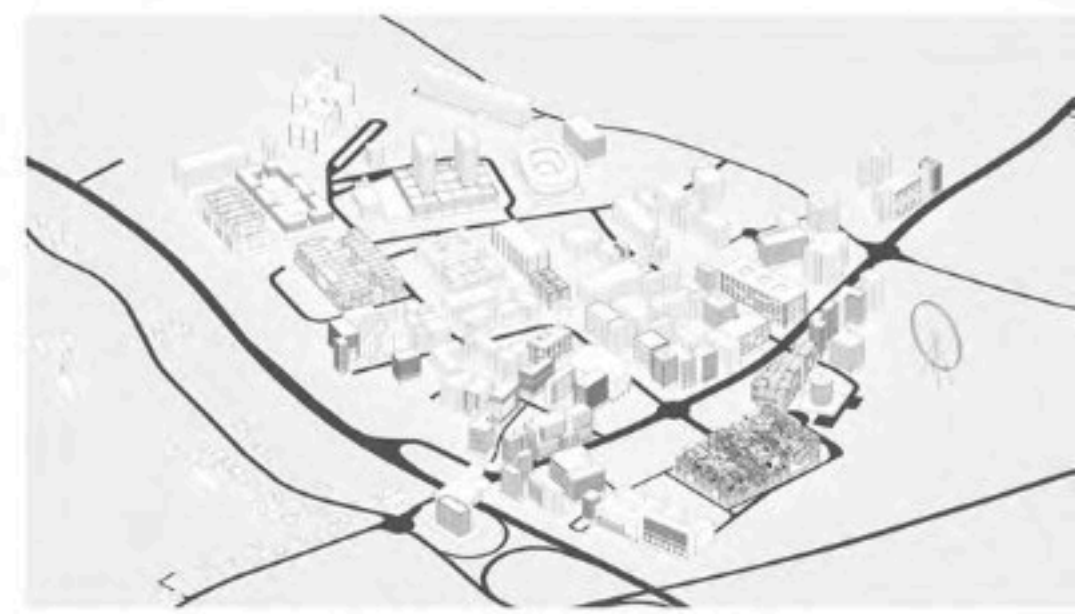
The following diagram shows the change from existing situation of 2021 in to the new land of Foetz in 2050 where multi functionality is given the priority.



Existing Situation 2021



Mono functional to Multi functional



Roof as new Land - Foetz 2050



City within a City - Cora, Foetz

Foetz is a city of individual urban islands drifting in an enlarged landscape. The structures remain, while the rest of the city is slowly replaced by forest, gardens, and wildlife. Today's large parking lot is expected to be gradually transformed into more greener open spaces leading to unbounded pedestrian streets.



The urban transformation is executed in different stages in time. As much as it's not possible to realize a project instantly, the project emphasized the benefits of long term transformation.



# NAKED BELVAL

Academic Project university of Luxembourg 2023

Re-Imagine Belval

Location - Belval, Esch Sur Alzette, Luxembourg

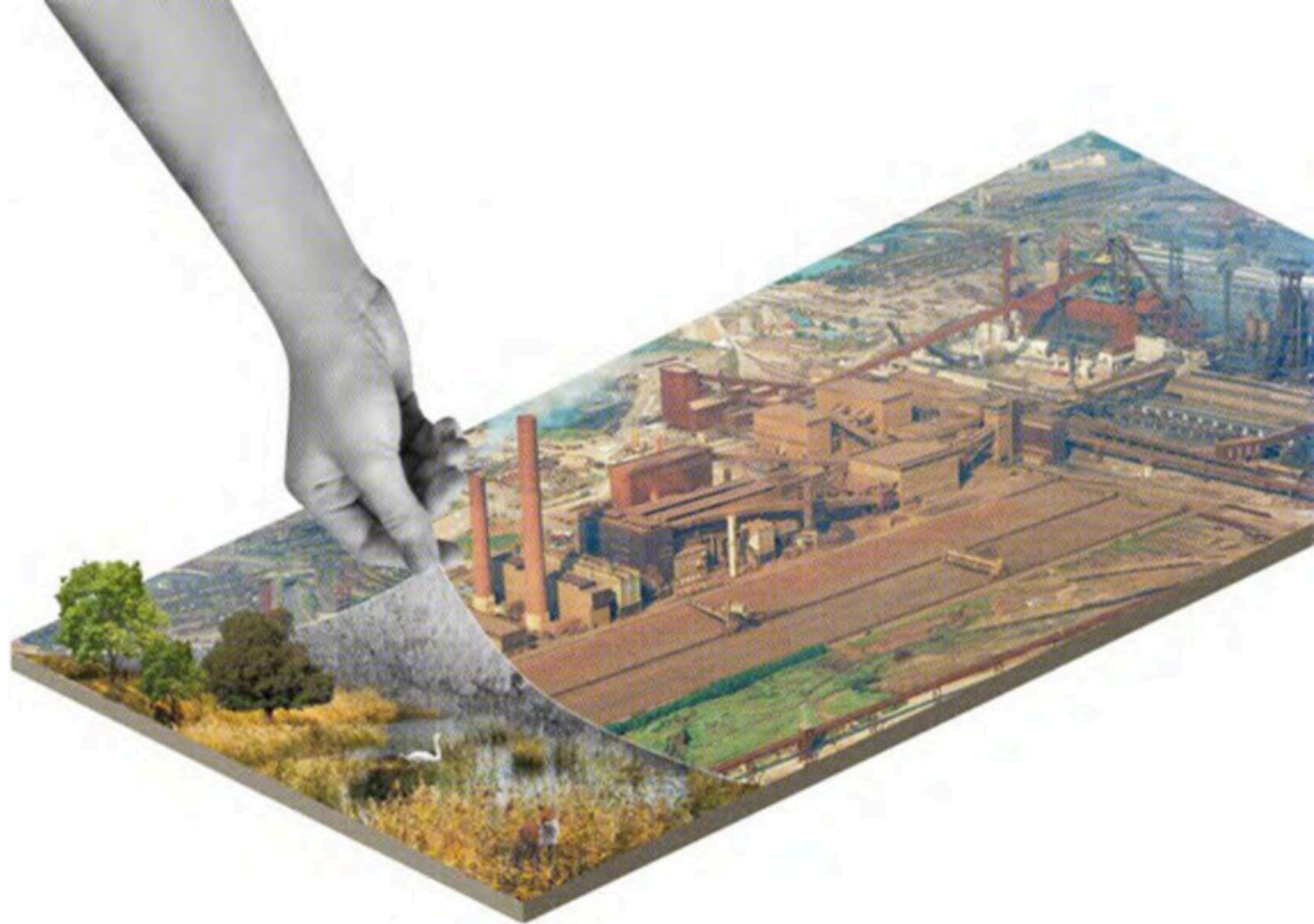
The concept of the project is to intervene within the built spaces in Belval, removing the sealing layer of the city to "make it naked" to improve our relation to nature, increase green areas, provide a habitat for animals, and boost soil biodiversity.

The industrial activities in Belval created this polluted hill containing heavy metals such as cadmium, zinc, manganese, etc. The design of an urban forest on this hill is a long-term plan to plant specific plants to remove these heavy metals from the different soil layers and return this area to nature. This technique is called phytoremediation and is widely accepted as a cost-effective environmental restoration technology.

Belval as we see it now is completely sealed off land with little or no greenery in the centre of the area, despite having a rich history of green forests and bottled mineral water industry before the growth of the steel industry. Industrial pollution has poisoned the soil and groundwater and, in part, has spilled over the hill that is visible as soon as you enter Belval from the road. Belval Nord and Belval park are the only two main green spaces we can find there.

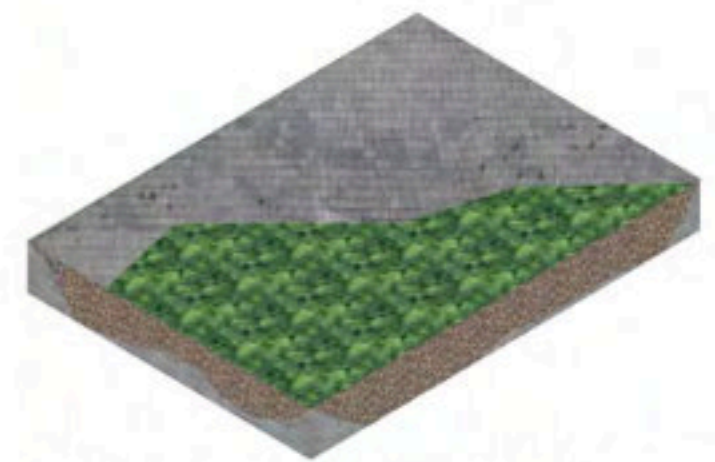
Our proposal is to strip Belval bare.

Our project, Naked Belval consists of punctual interventions within the built spaces and the introduction of green areas. Apart from many small spots on the campus, our four main areas of action are: the polluted hill, the area under construction near Belval park, the Place de l'academie and the area behind the Maison du Savoir building, where we designed different types of green zones, from an urban forest, a pop-up greenery and a wetland.

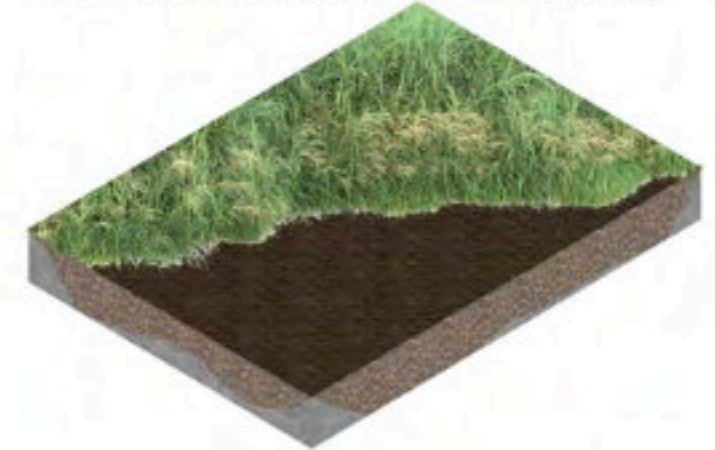




- INTERVENTION TYPE 1
- INTERVENTION TYPE 2
- INTERVENTION TYPE 3
- INTERVENTION TYPE 4



INTERVENTION 1 (POP UP GREENARY)



INTERVENTION 2 (URBAN GREEN)



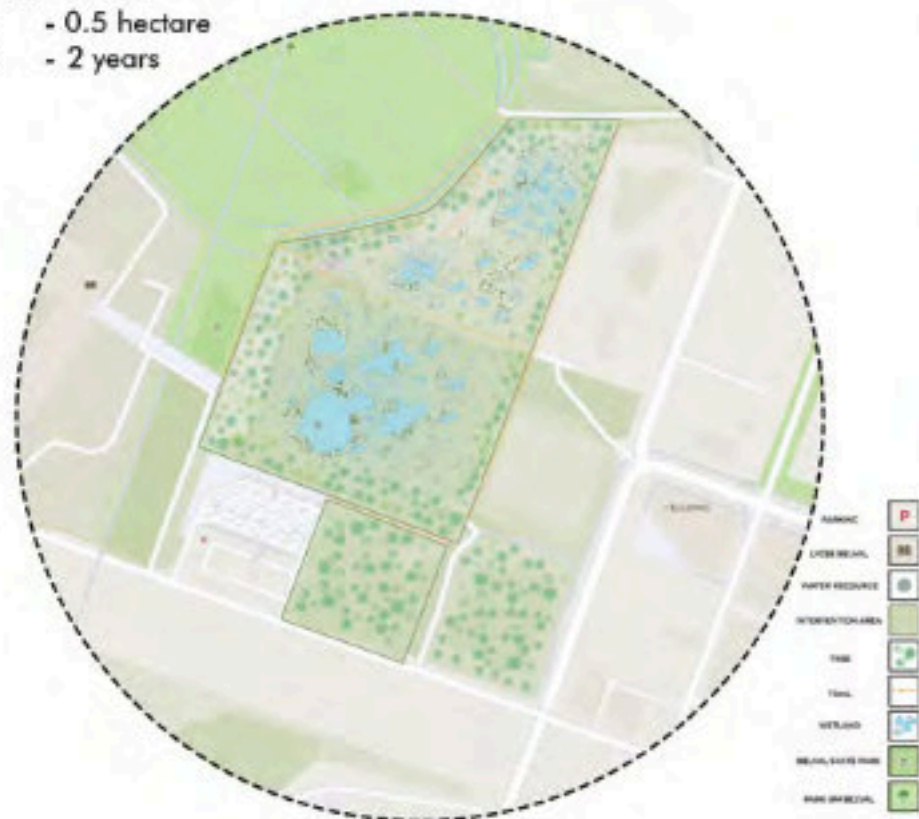
INTERVENTION 3 (WETLAND)



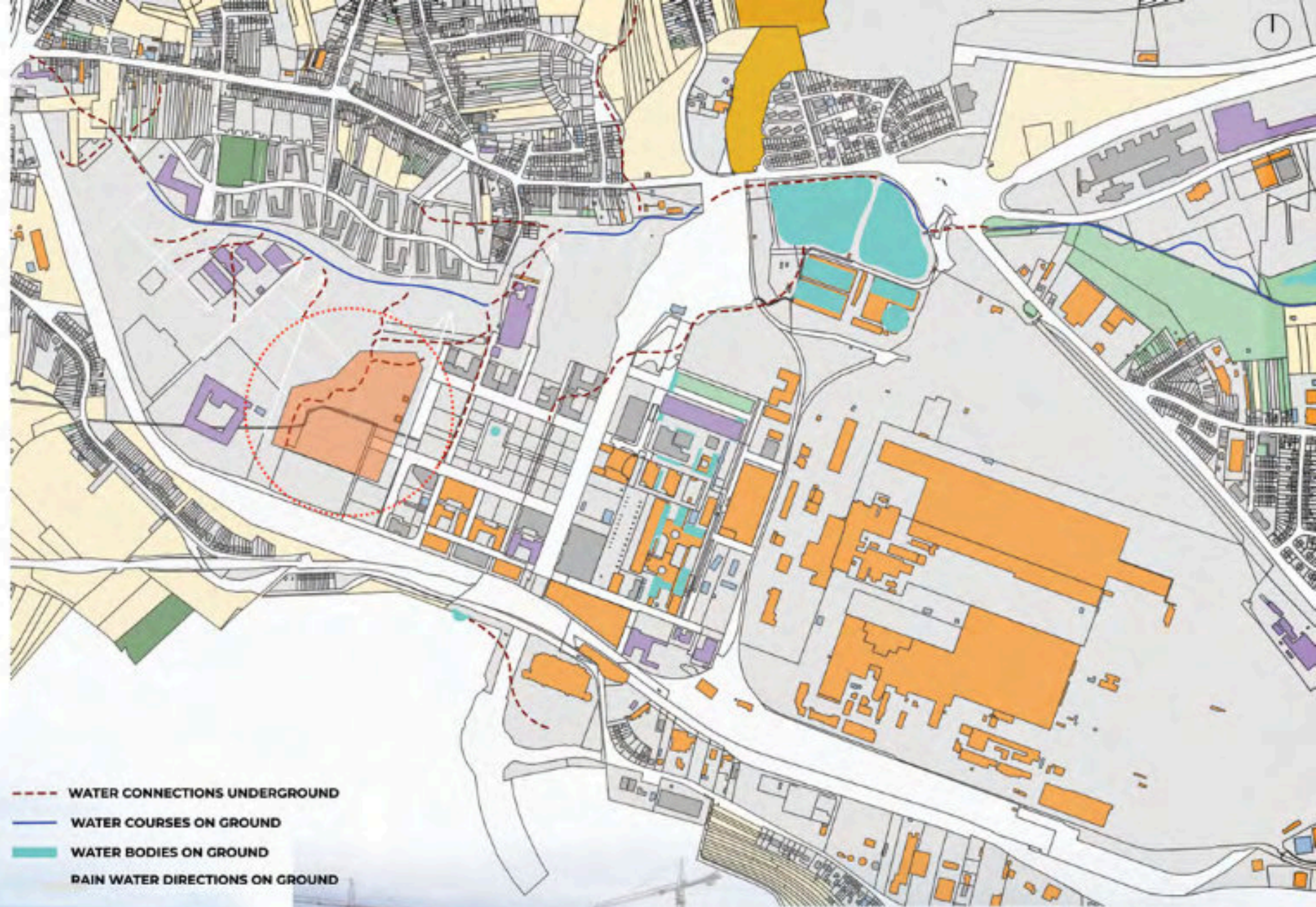
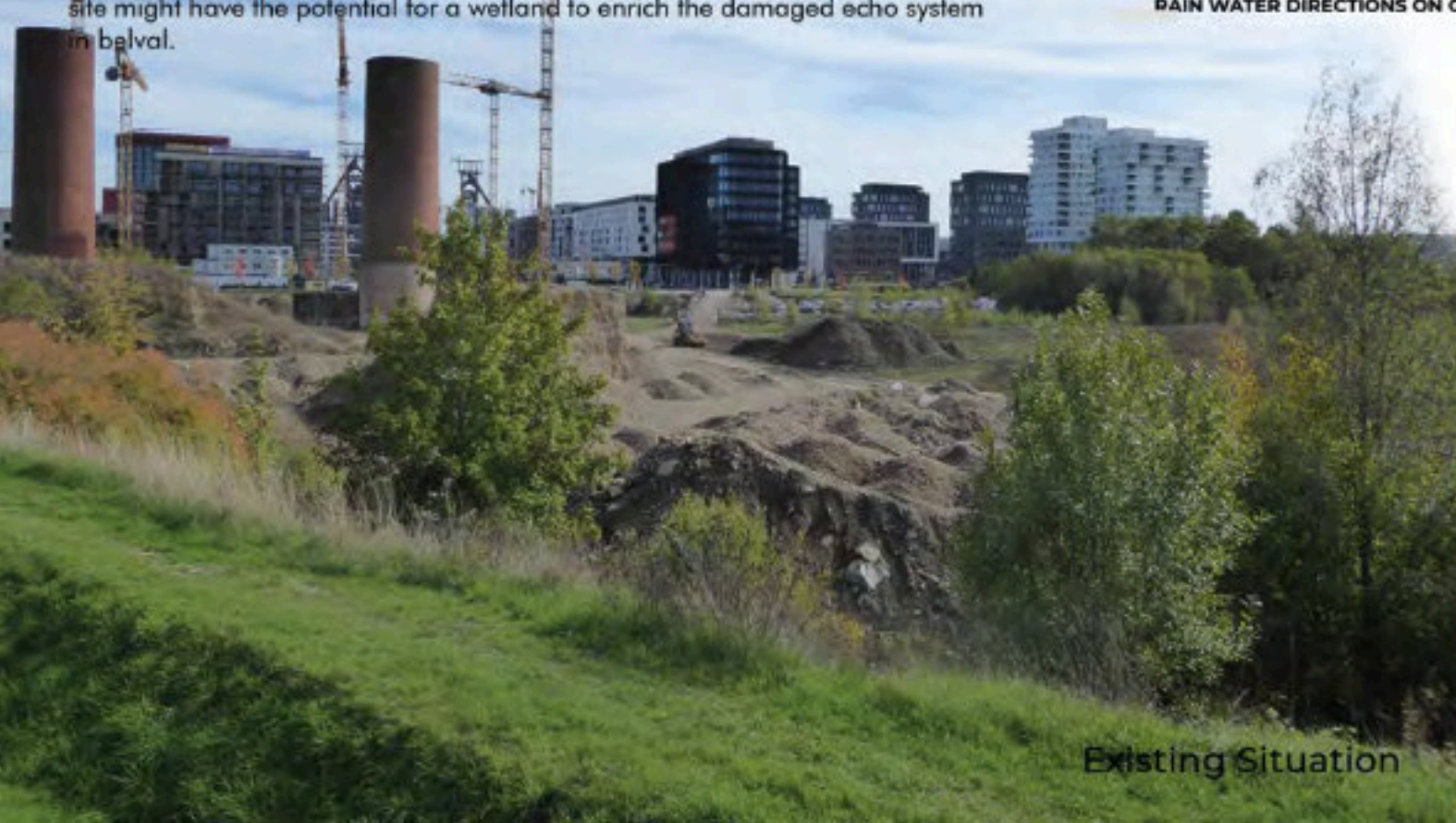
INTERVENTION 4 (URBAN FOREST)

# The Urban Wet Land

Project - Urban Wet land  
Location- Belval  
Area - 0.5 hectare  
Time - 2 years



The wetland: This intervention is located between the park and the construction site. The area is lower than the surrounding land and allows for seasonal flooding and rainwater harvesting. The integration of the wetland into the urban planning would help to clean up the Belval ecosystem, create a safe habitat for flore and fauna and improve the living conditions of the neighbors. And the site used to be a water source for Belval mineral water, the site might have the potential for a wetland to enrich the damaged echo system in belval.



Existing Situation



After Intervention

# The Urban Forest

- Project** -Healing the polluted Soil hill
- Location** -Belval
- Area** -2 hectares
- Time** -5 years
- Objective** -Decontaminate the soil that has poluted been long time.Healing the surface using specific plants and giving back to nature.

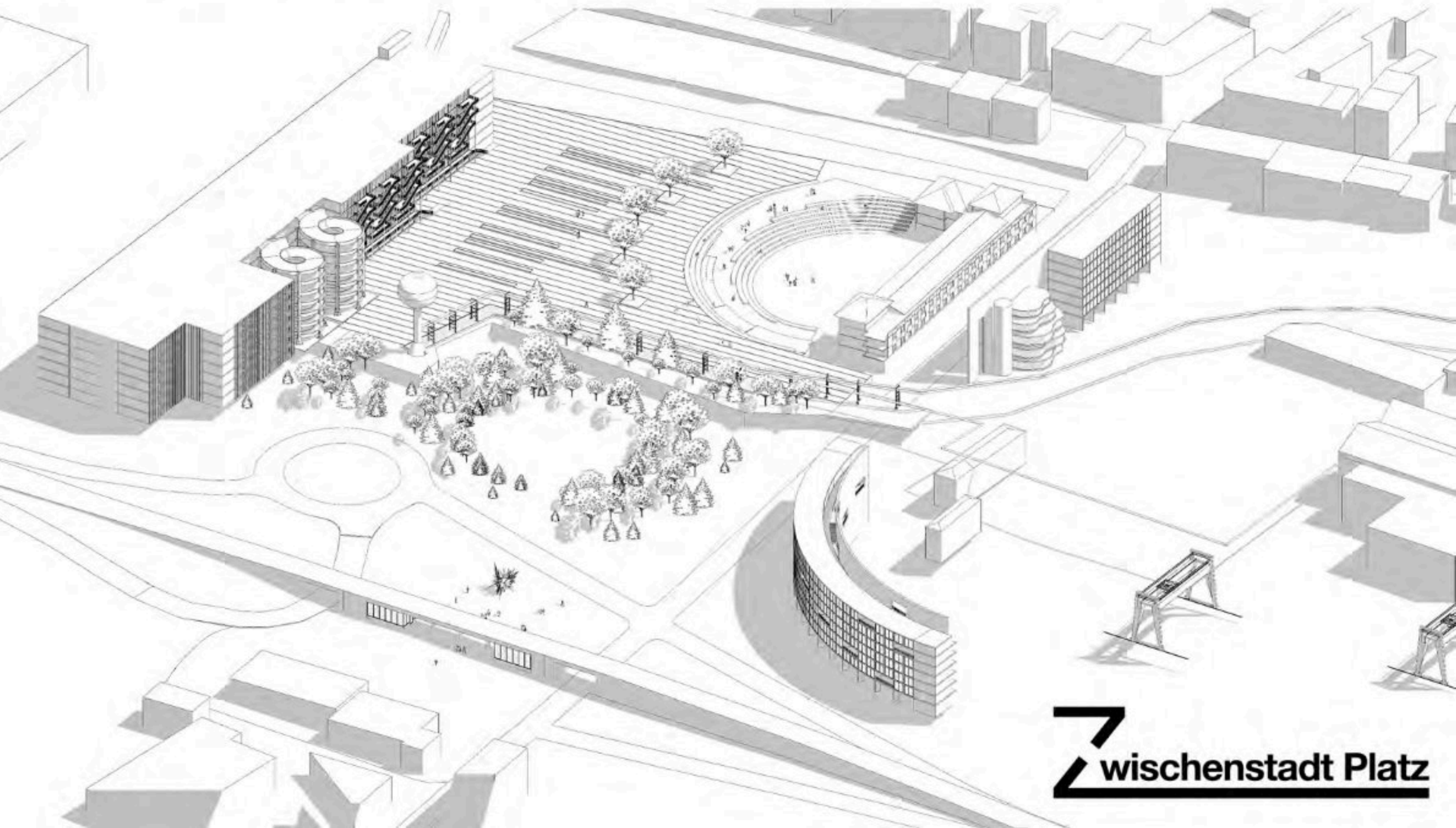


# ZWISCHENSTADT

Academic Research Base Project | University of Luxembourg 2022

Location - Rodange, Luxembourg

In the face of climate change, resource scarcity and rising social inequalities, the transformation of in-between cities (neither urban nor rural) towards sustainable rural-urban constellations is becoming increasingly urgent and challenges the discipline of architecture and urbanism. Therefore the main objective of the project was to analyze the transborder region of the southwest of Luxembourg including the communes of Pétange (L), Aubange (B), and Longwy (F), where the socioeconomic conditions as well as the political-administrative structures are even more complex than usual. While the analyses were categorized in to different fields, our group's main objective was to analyze the production system of the area.



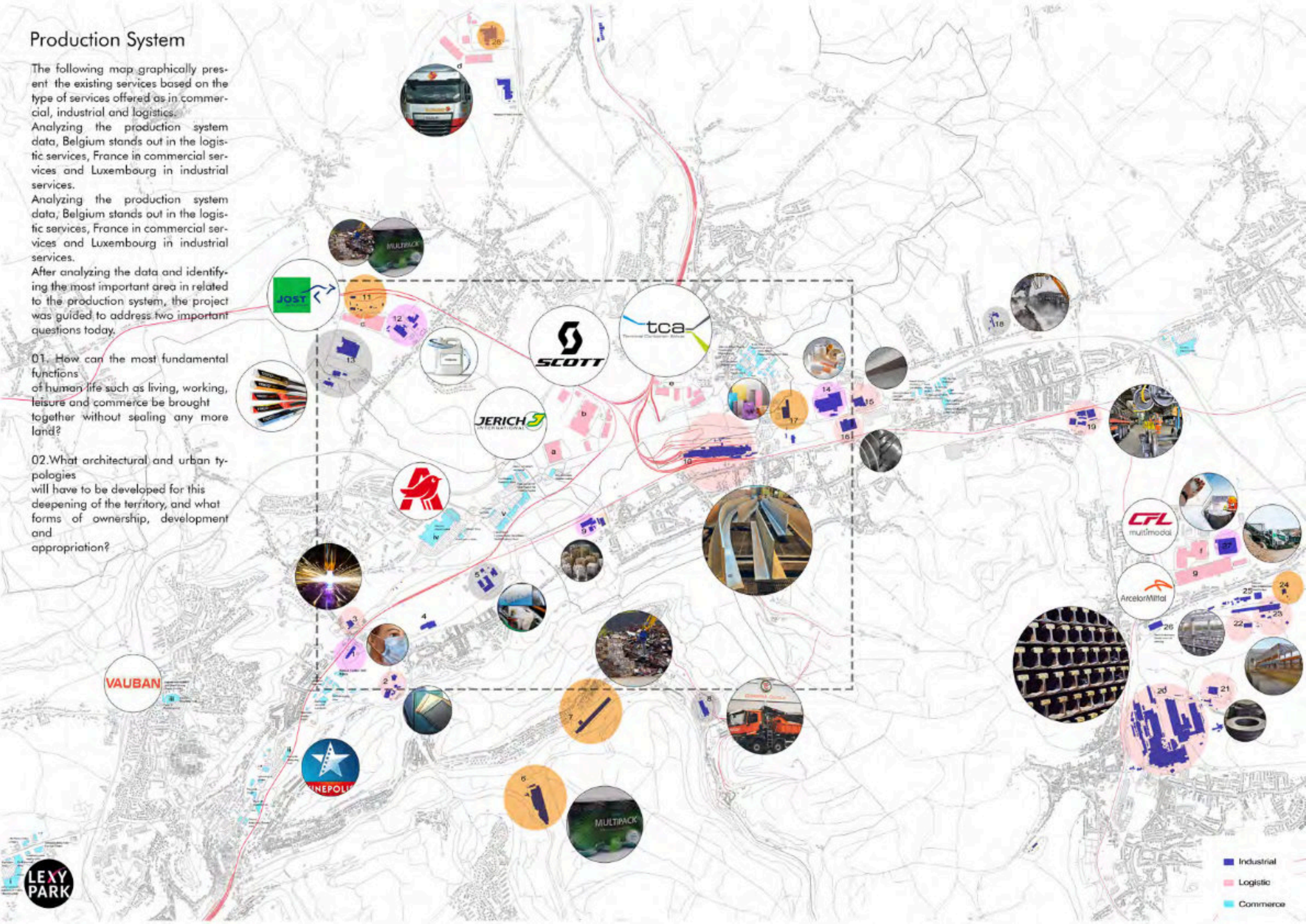
**Z** zwischenstadt Platz

The following map graphically present the existing services based on the type of services offered as in commercial, industrial and logistics.

Analyzing the production system data, Belgium stands out in the logistic services, France in commercial services and Luxembourg in industrial services.

01. How can the most fundamental functions of human life such as living, working, leisure and commerce be brought together without sealing any more land?

02. What architectural and urban typologies will have to be developed for this deepening of the territory, and what forms of ownership, development and appropriation?



# Work Force in the Region



- Steel Industries
- Building Material / Construction & Automobile
- Recycling & Packaging Industries
- Chemical Related Industries
- Logistic
- Hypermarkets
- Supermarkets
- Others/Gardening materials, House hold accessories, Clothing, Automobile and parts dealers, Electric equipments

1486  
713  
177  
389  
935  
1048  
324  
537  
5590

## Legend

- Grid
- Commerce
- Logistic
- Industrial
- Roadline
- Railway

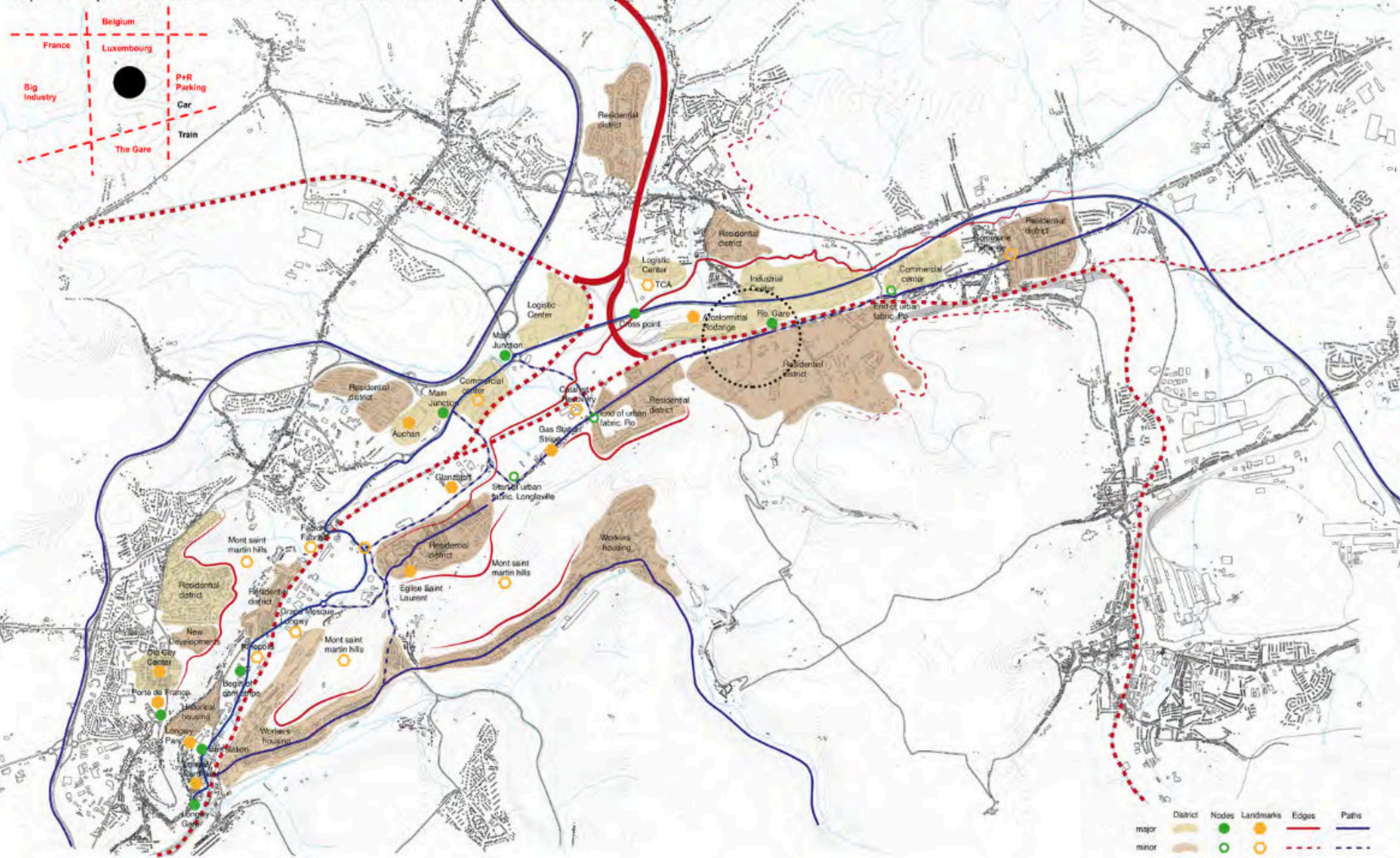
## Potential of the Project

Even though this cross-border area makes it almost a city center with the train station, working factories and well-connected road systems, it lacks the presence of liveliness which is exhibited through human interactions. Therefore our project analyzed different approaches to transform this area in to a better urban city where living, working and enjoying could all be a part of it.

In order to continue the project, we analyzed and selected the best potential area for the intervention.

We have selected the area of Rodange, a small town in a strategic center with services of industries, commercial, and logistics. The main intervention will be proposed in a mixed development land located right next to the biggest industrial service provider of Luxembourg, ArcelorMittal. The land will be proposed as a public space for the use as a gathering point for both residents and commuters.

**Proposal- "A place of freedom" in the middle of the of Industries. A proposal of a series of public spaces and Infrastructure**



## CASE STUDY

Area -84,000 Sqm

Scale-1:2500

The proposal finds the answer for following questions

01. How can the most fundamental functions

of human life such as living, working, leisure and commerce be brought together without sealing any more land?

02. What architectural and urban typologies will have to be developed for this deepening of the territory, and what forms of ownership, development and appropriation?

And find the very possible solution of in-order to creating a public space for people to work, Live, enjoy their lives.

There are 5 Interventions

1. Proposing P+R+Live insted of P+R
2. Proposing an Open Air Theatre and cultural Center
3. Expose the hidden Industrial aesthetics within a public space
4. Upcycle Art and Craft center
5. Proposal of new Entrance and Musium for Arcelormittal Rodandge.

### SITE ANALYSIS

Area: 84,000 Sqm  
Scale: 1:2500



KEEP  
RELOCATE

Avenue de l'Europe

Rte de Longwy

ARCELORMITTAL RODANDGE  
Steel Factory

# Interventions



Expose industrial ornaments  
to general public

P+R+Live

Proposed open air theatre + cultural centre

# FESTIVAL PLAZA

## Negombo Beach Park

Academic Individual Work

Comprehensive Design Project

BSc -Sri Lanka

Project - Festival Plaza

Location - Negombo, Sri Lanka

3rd Year - Semester II(June-August, 2019)

Client - Urban Development Authority

User - Local and foreigners

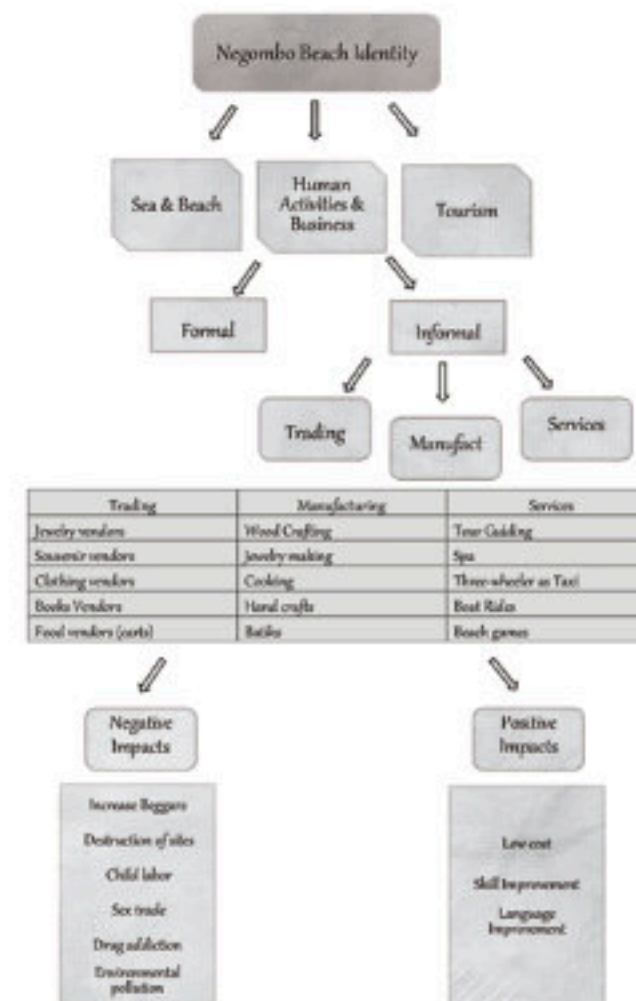
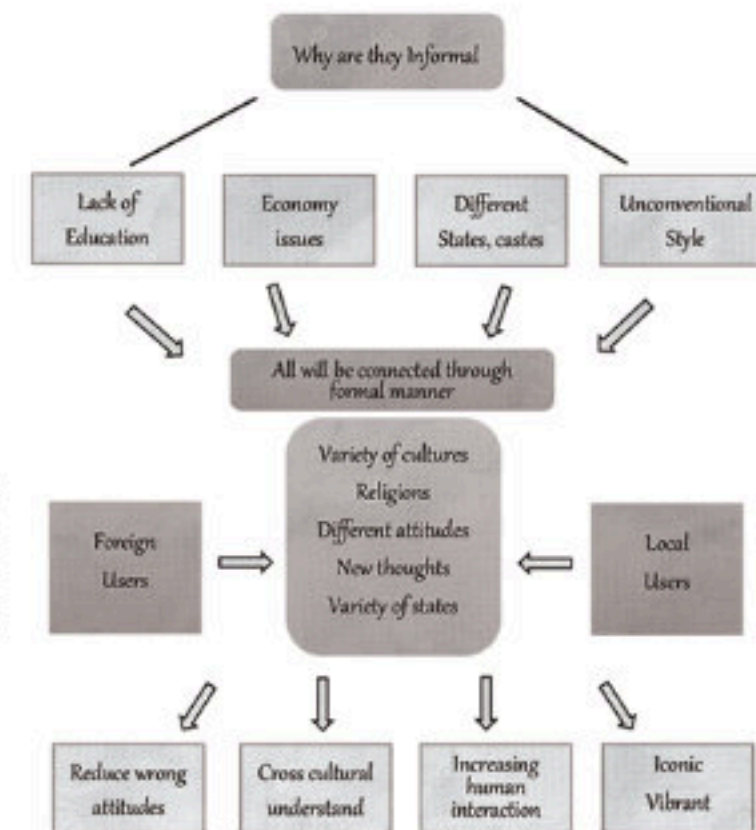
Buildable Area- 1000sqm

"A Festival Plaza is a place that commercial activities and social interactions took place for a selected period of time in a particular day or days. It may be a temporary created structure or multifunctional space or permanent space."

When we analyze the informal business sector, there are many problems related to that and most of them are social problems. Lack of education, economical issues, unconventional lifestyles as well as the lack of proper understanding about the society holds a major place in them. Even though these people have their own unique abilities, they choose the path of informal sector due to the above mentioned problems.

Through this plaza, all these informal businesses will be given a formal background making them semi-formal businesses. All of these businesses will be connected under one roof within this plaza. As a result of that the number of people visiting the informal sector will increase as well as the ideas will be shared. With the changing form of the business, the workers of these informal businesses will change their attitudes as well as the mindset making the society of Negombo a better place than it ever was.





## Design Concept

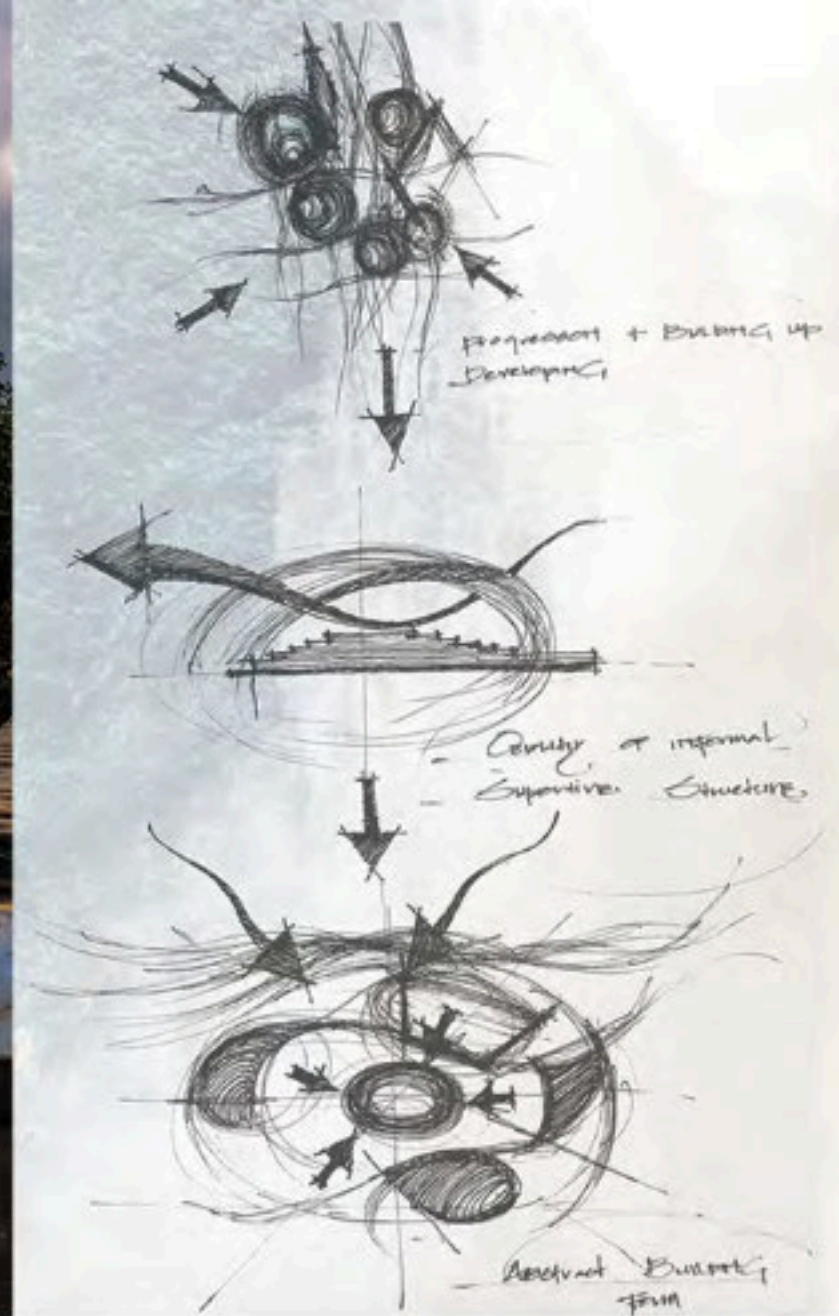
Apart from the negative impacts, it can be mentioned that these informal businesses are the base of economic strength in the Negombo city. Even though they are informal, the positive impacts cannot be neglected. These informal businesses not only help in the economy, but it also adds value to the city with their colourful and different aspects of creativity. Unfortunately the value of these businesses are hidden behind the word "informal". These businesses are scattered all around the Negombo area and due to that the value cannot be identified. It is to be believed that the joining of these scattered informal businesses under one space will give a new life to the city by unveiling their true value. In order to achieve that, this festival plaza will be providing a formal platform where all of them will get together and work as a family. This festival plaza will be a service provider as in many informal services will be provided to the primary users under one roof.

As shown in the above diagram, there are mainly four factors that make people join to the informal sector. They are lack of education, economical issues, difference in casts and unconventional styles. But through this festival plaza, these factors will be given a value making them feel special in their own way. In addition to that, these businesses will increase the cultural value letting the users experience variety of cultures through a new aspect.

### " ENHANCING THE HIDDEN VIBRANT "

Furthermore this place will not only provide space for a certain group of people in informal sector but it will provide the opportunity for everyone to start up their service in the festival plaza. This will be a supportive shelter to entrepreneurs to build up their dreams.



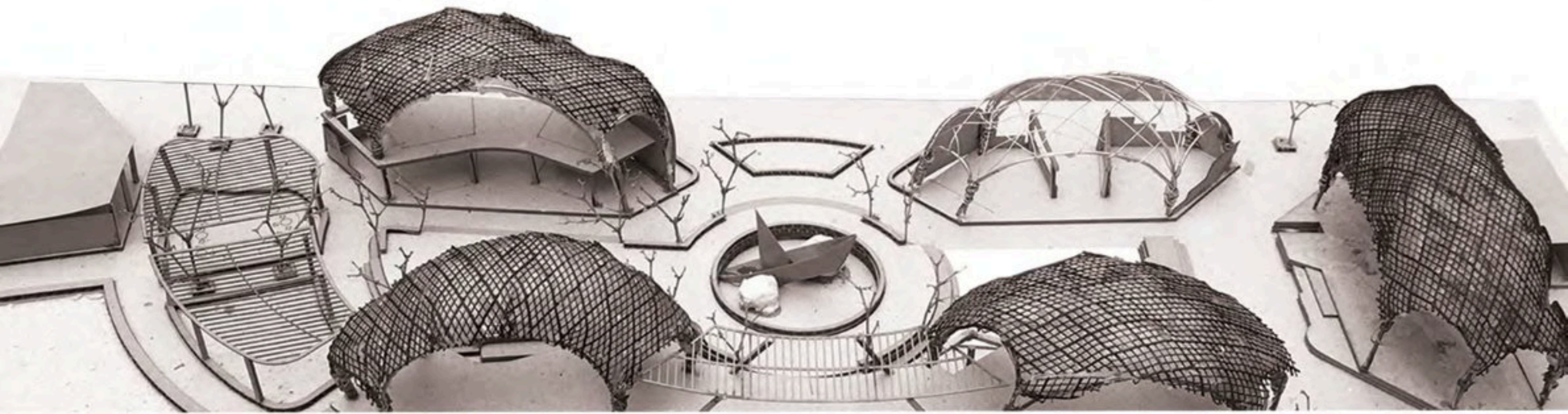


## Form Development

The design form was derived from the mostly seen element of the sea, the sea shell. Sea shells can be commonly found all around the sea but as we all know, the beauty of it comes to life when we have many of unique /rare sea shells.

The informal sector is also like that. There are many informal businesses all around the area which are scattered. But collecting these parts will create a beautiful scenario where everyone gets benefitted. As in the quality, sea shells can be neither described as open or close.

It is an element which is mostly covered, but that little entrance makes the habitats wants to go inside it. Just like that, this festival plaza will be a space combined of closed areas with little entrances making it an interesting place for the users.



Building Details



Single Unit Detail

Timber Shingles Roof

Steel framework

RFC slab 150mm

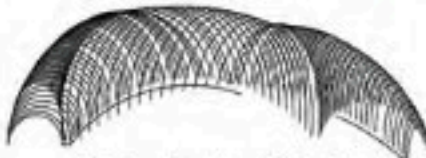
H-iron beams

H-iron colomns  
220\*220mm

RFC base 150mm



Timber Shingles Roofing



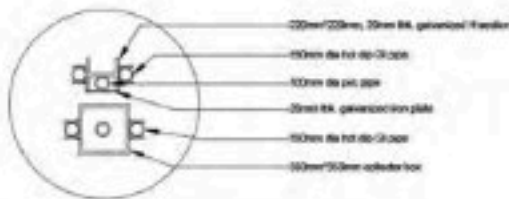
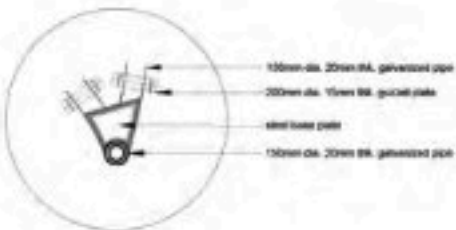
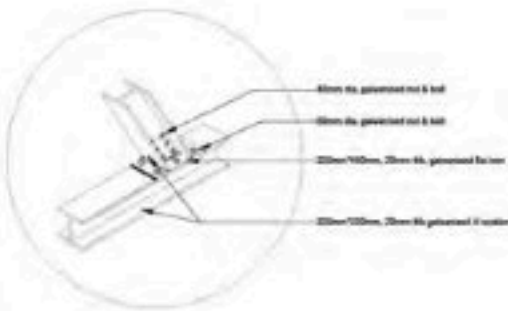
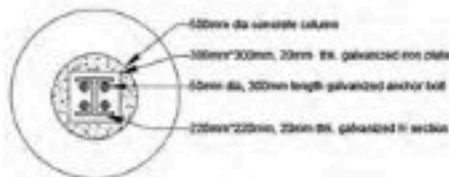
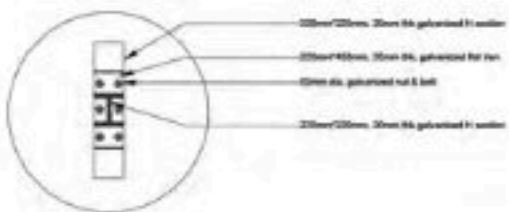
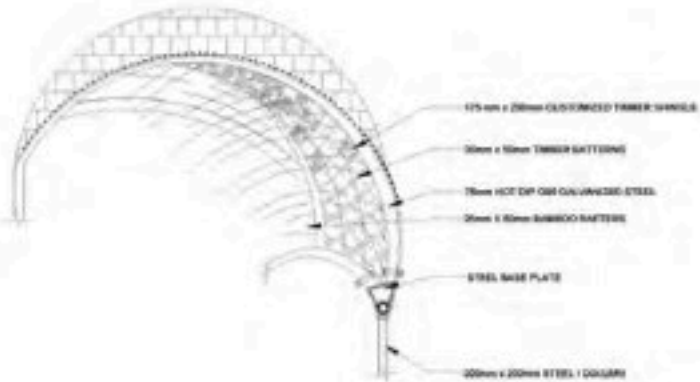
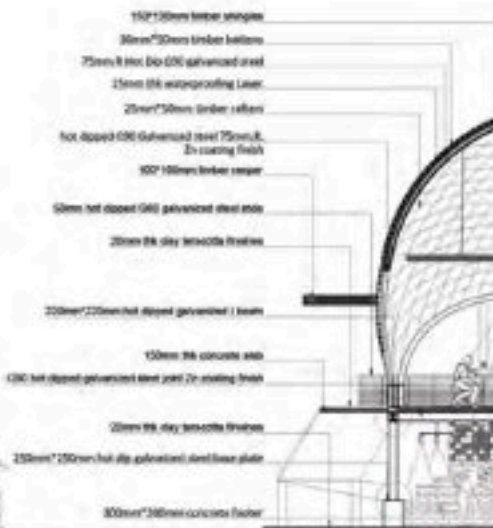
Timber battens Structure



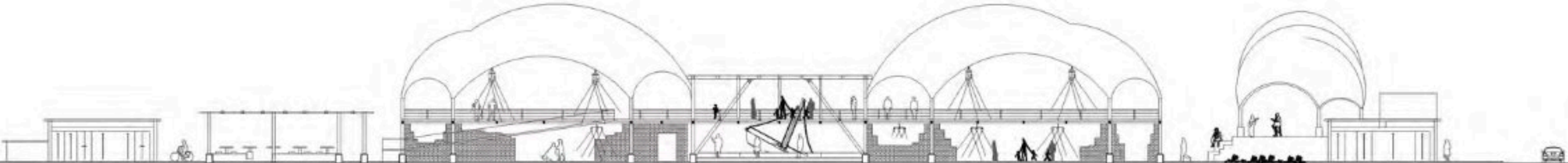
Steel Roof Structure



Ground Structure



Section CC



Rear Elevation

# SINHARAJA EXPLORATORIUM

## Research Center

Academic Individual Work

Major Design Project BSc -Sri Lanka

Location - Kudawa , Sri Lanka

3rd Year - Semester I(Feb-April, 2019)

Project Name - Sinharaja Exploratorium

Client - Forest Department of Sri Lanka

User - Scientists

Local and foreign Researchers

University students

Buildable Area- 500 sqm

### Project

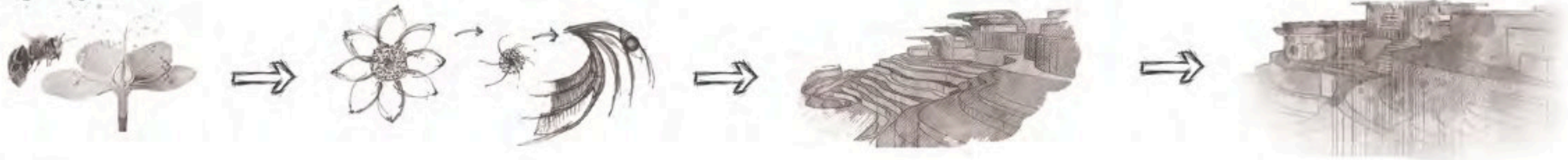
The research center was proposed to be built in a well-known forest reserve in Sri Lanka, Sinharaja Rainforest. Due to that, the design was completed prioritizing the impact to the natural environment. The habitats of the rainforest were considered as the primary user while the secondary users were the researchers. In addition to that, the concept "survival through mutualism" was intended to be much more than it. It was used to convey a message to the society. Deforestation; a larger threat experiencing by the rainforest can be mentioned as a result of human activities. Lack of pollinators in the area has made the regenerating process a failure. Around 15-20 years ago, these plants were regenerating as usual but with time, now they have stopped regenerating completely. This problem is not only limited to this rainforest. It can go further where humans will be left with no food to survive. So, it was important to convey the message that as a person living on this earth, we will only survive if we work as a team; a family. The structure is mainly divided into two parts, higher and lower located in the natural contour lines of the site. The building works in line with the nature and it is to be believed that rather than being a building within the forest, it will be a part of the nature where each member can be helpful to the other.

"Spaces that became a part of nature, rather than becoming a building within the nature."



# Design Approach

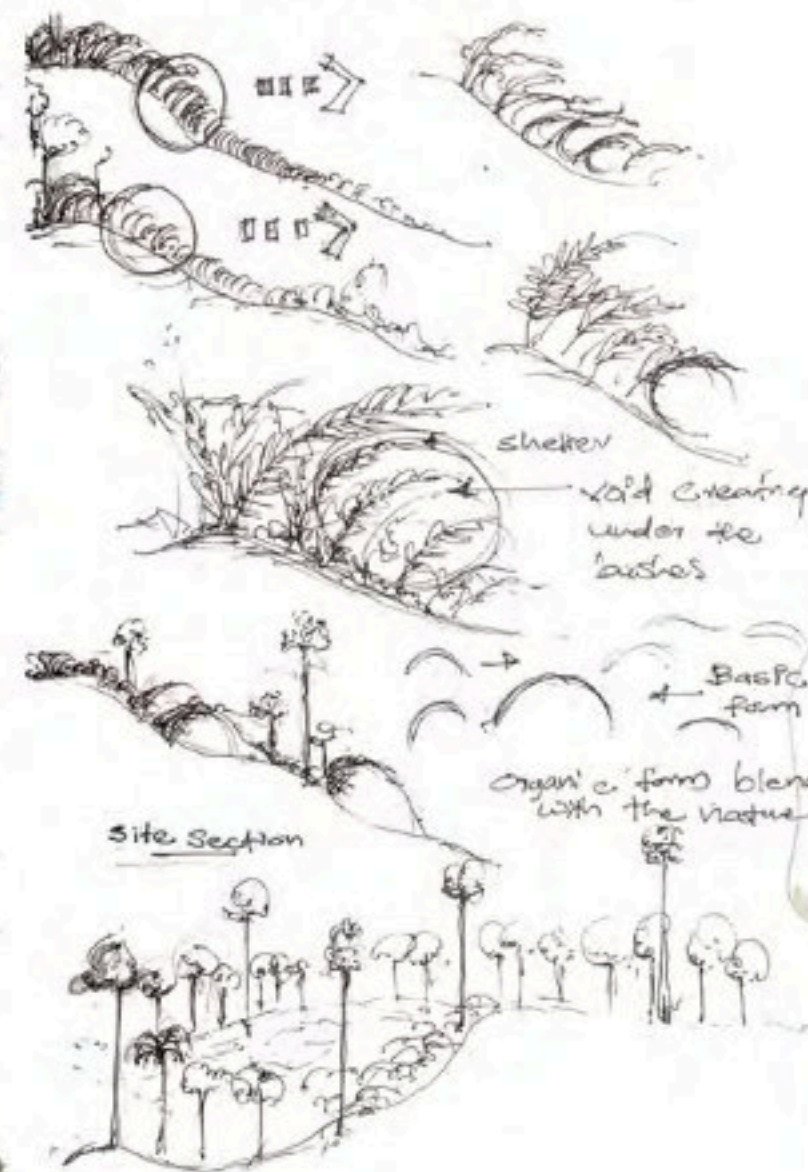
## Design Progress



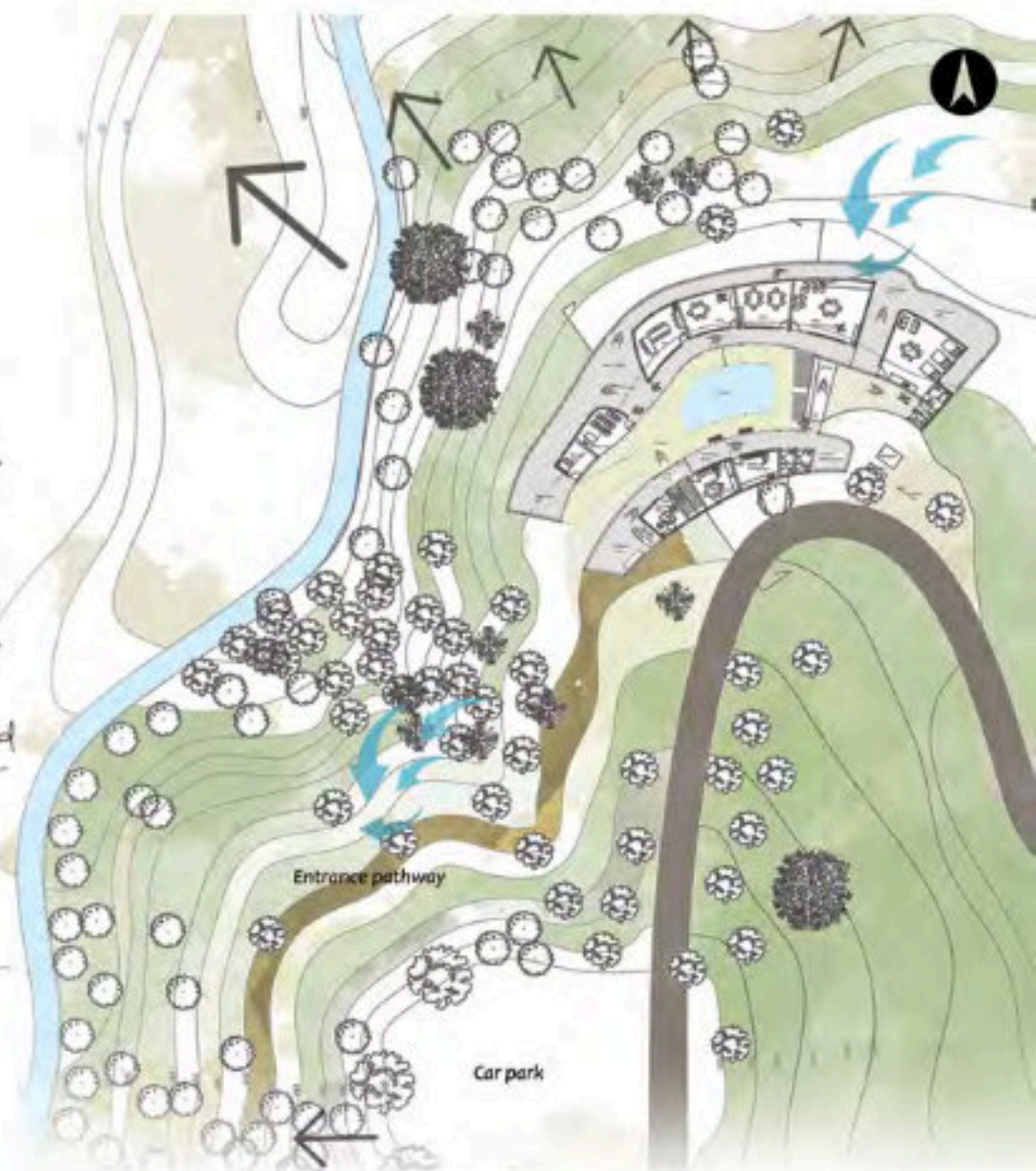
## Site Analyze



## Site Condition



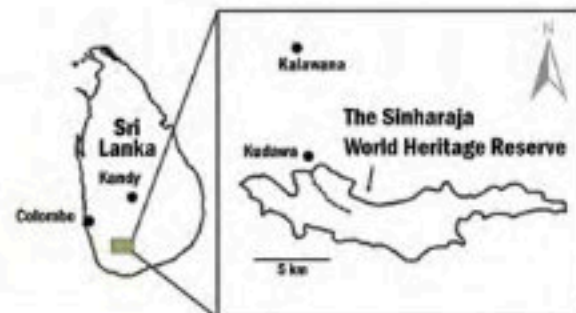
## Mass and Orientation

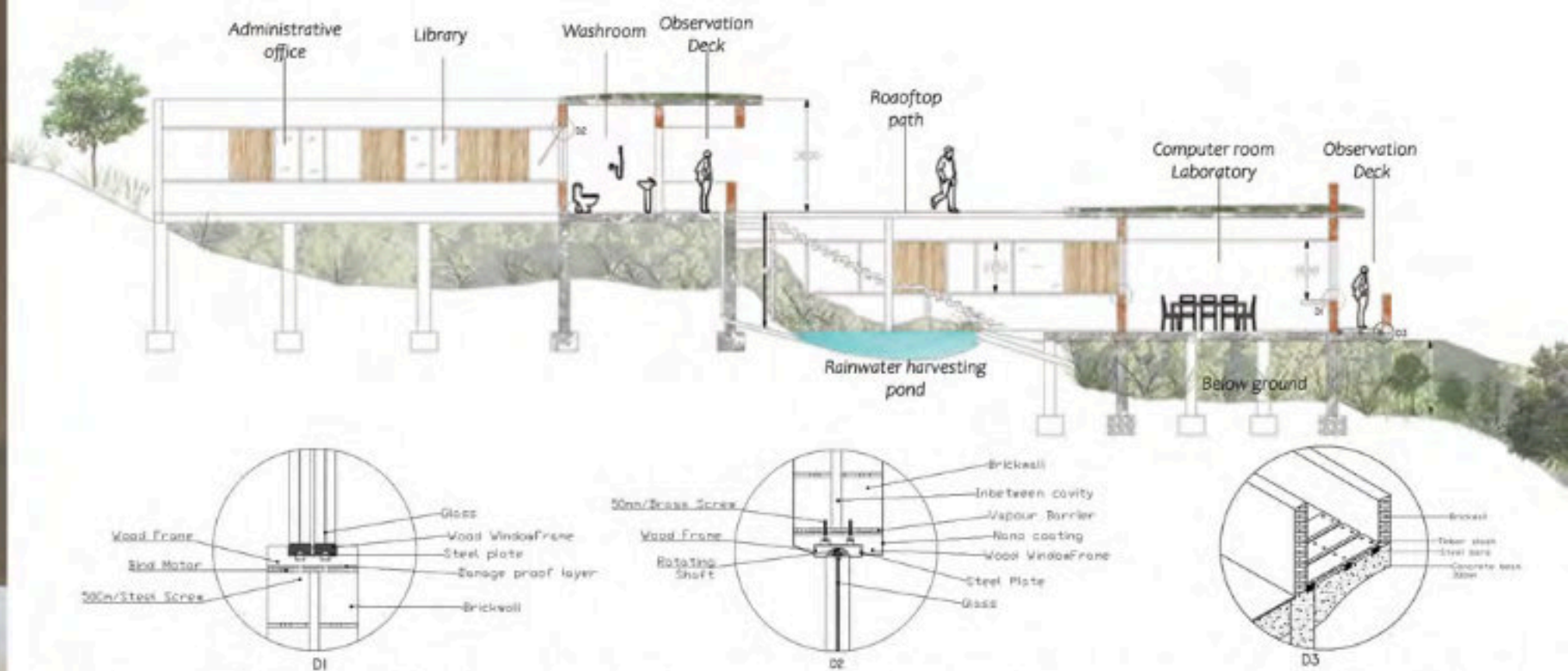


## Design Concept

### "Survival through Mutualism"

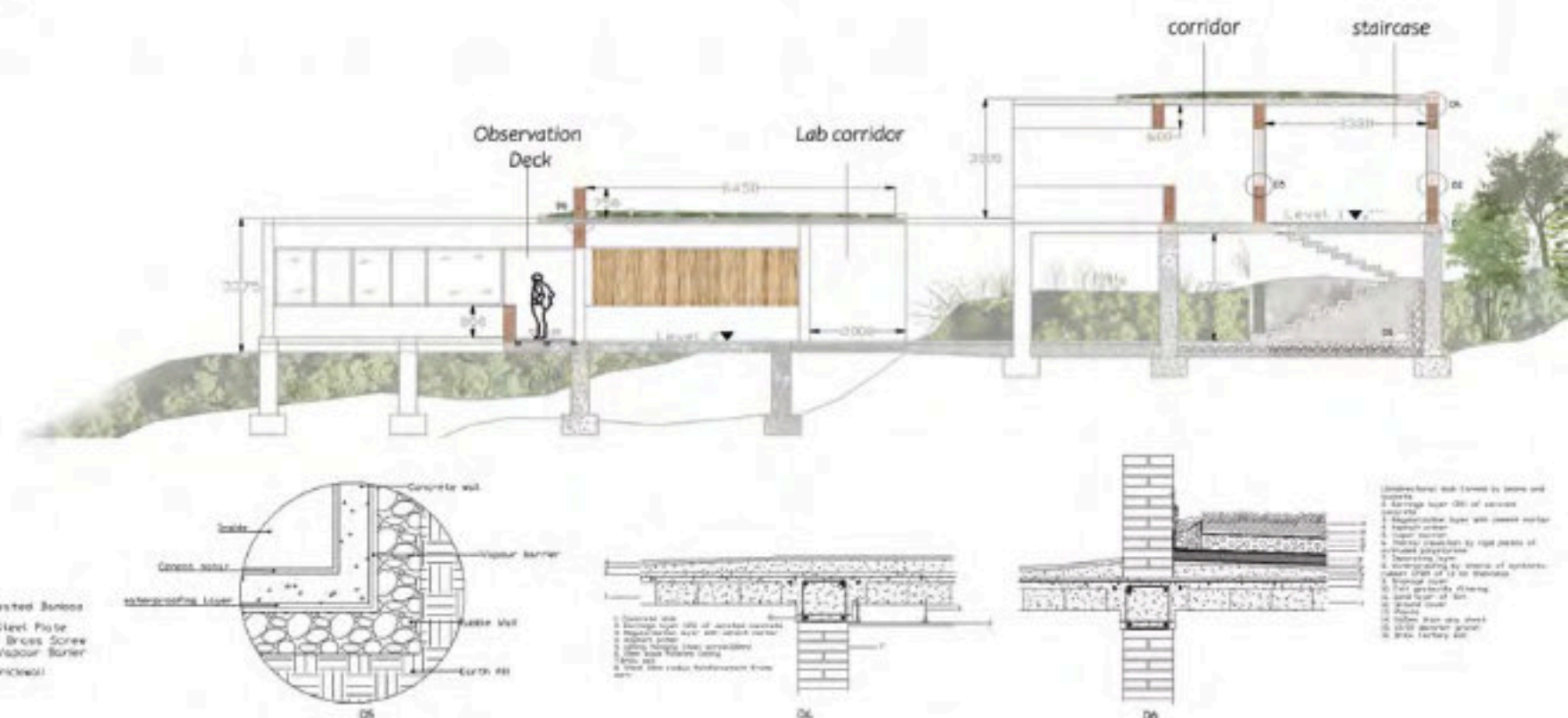
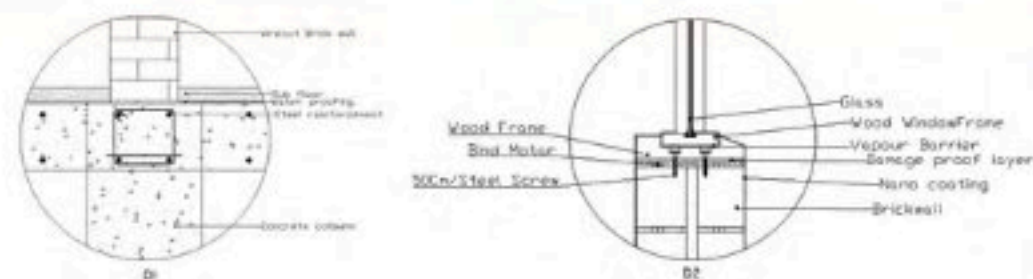
According to the research done about pollination, the most important factor is the bond between the pollinator and the plant. As said, the mutualism between two parties is the key to survive within the nature. Just like that the research center was designed considering the contour lines of the site. The built environment will work with the natural contour lines with mutualism in order to blend and survive within the nature.





Overall, the structure of the building will be constructed using concrete as the main material. The selected foundation for the design is isolated column footing. The foundation type was selected considering the slope of the site and contour lines. As this site is very sensitive site, there are lot of animal behaviors happening. Therefore this building was lifted from the ground. Isolated footing has the minimum impact to the ground comparing the other types of foundations. A large weight is carried by the concrete columns and the foundation is constructed to safely transfer the load in to the ground without any damage to both environment and building. In the second floor level, minimum number of columns have been used to transfer the roof slab which covers a big span of the building.

Concrete was chosen as the column material as it has the ability to create any shape. Even though the walls are constructed using bricks, it haven't been used elsewhere as it can't create curved shapes. The selection of wire cut compressed bricks were used due to the aesthetic appearance it gives for a better finishing. Also it gives the feeling of natural coldness. It also doesn't absorb the heat inside the building. Furthermore brick is a commonly found material around the context of Sinharaja. Earth blocks are also proposed as an alternative option. Cement established mud block and polish concrete were mostly used as it is a low cost construction technique that gives a better outcome. As well as the cleaning of a concrete waxed floor is easier comparing to the others. For the outer observation decks, Silbara trunks were used.





## Spatial Arrangement

The layout of the scheme was designed to get all the views and vistas to the building. The building has an 120-150 degree angle view. As well as, all the spaces are provided with a view of the Sinharaja Forest. Overall, the shape of the building is thin and is located along the contour lines. In unit one, there are six main spaces. The second unit's roof top is connected to the first unit's floor through a pathway. As well as, a staircase is provided from the first unit which connects to the corridor of the second level. In between these two units, a natural courtyard with a rain water harvesting pond is designed to give an authentic feeling to the research center. All the labs and the lecture hall is located in the second level. In order to provide a better facility, the accommodation of the researchers are also located on the same floor, but as a separate space on the corner. There are three main viewpoints that has been designed for the research observations and they are marked with "X" on the below floor plan. Both the units are elevated from the ground. Therefore, there is no disturbance to the nature as well as to the ground.

- A. Library
- B. Office Room
- C. Pantry
- D. Washroom
- E. Stairway
- F. Security Room
- G. Lecture Hall
- H. Lab Lobby
- I. Equipment Storage
- J. Fauna Lab
- K. Flora Lab
- L. Computer Lab
- M. Accommodation
- N. Gathering Area
- O. Courtyard
- P. Observation Deck



Floor Plan

### Structure

Animal behaviours and habitats are happening on the ground and also there are some stream water floating along the slope. Due to that level 1 is lifted 2m from the ground and level 2 is 2.5m lifted from the ground.

### Brick wall

Highly compressed wire cut clay bricks are using to construct the wall structures in order to maintain a balanced temperature inside the building naturally.

### Green Roof

The green roof cuts off the solar radiation from above and eliminates heat islands. The roof keeps the interior naturally cool.

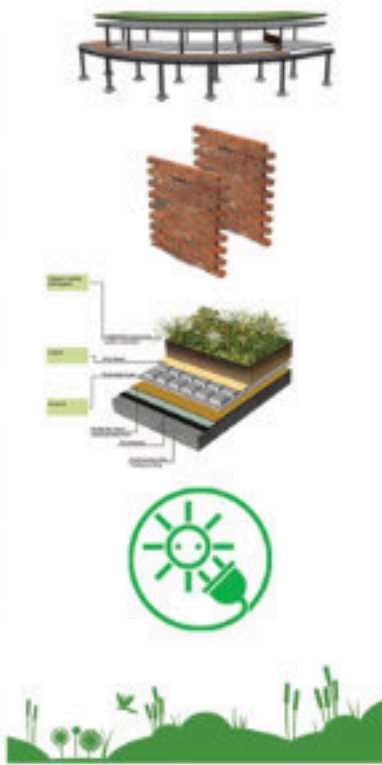
### Renewable Energy

Solar power will be using for alternative energy. Few solar panels using for produce solar energy. There is a method for transfer over energy for CEB line.

Native flora and fauna is an important factor for a research centre. On this site many native plants will be planted to increase the green coverage as well as the biodiversity.

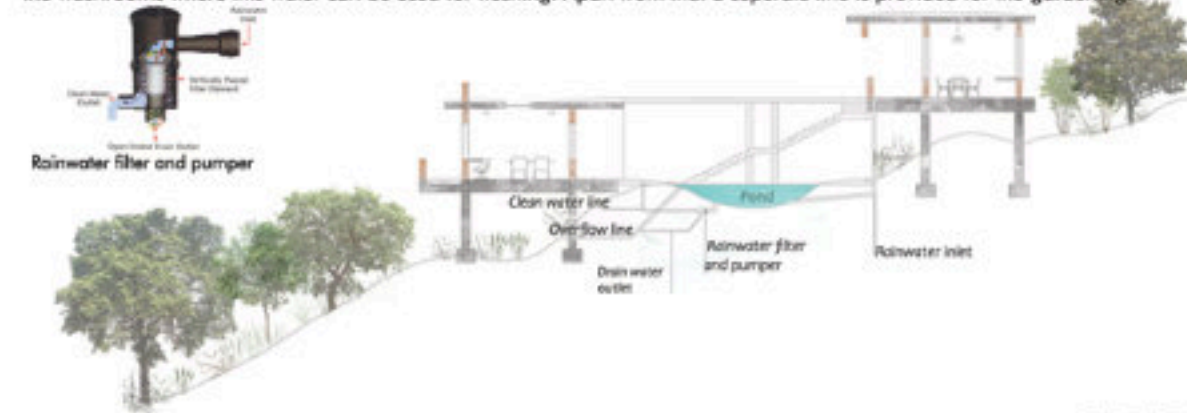
### Courtyards

The main key figure for reducing heat and it helps to maintain the natural comfort. Courtyard in between level 1 and level 2 reduce the heat island effect and offer better ventilation.



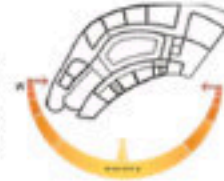
### Rain water harvesting

As the site is located in a rainforest, rain is a daily occurrence throughout the year. The rain water coming from the upper level building drain lines are connected to the pond which is located in between the two units. Apart from this, the rain water which comes through the site gets connected to the pond. The excess water is connected to a natural water body located near to the site. The collected water in the pond goes through the rainwater filter and pump. After that this water is connected to the washrooms where this water can be used for flushing. Apart from that a separate line is provided for the gardening.



### Day lighting

All the spaces within the building are designed to get the maximum daylight inside in order to minimize the energy consumption. As well as the openings on the roof, the louvered windows play an important role to get the natural daylight inside. During the daylight, all the spaces can be used even without the electricity power. The pond located in the middle also increases the amount of daylight coming inside by reflecting the light towards the space.



### Stack effect

The stack ventilation effect is used to naturally ventilate buildings. Cooler outside air is drawn into the building at a lower level and then rises through the space to vent out at a higher level after being warmed by sources of heat within the building such as people. A positive pressure area is created at the top of a building and negative pressure area at the bottom. This process can take place without mechanical assistance, simply by introducing openings at the bottom and the top of the building. As shown above, air comes in from the second level of the building and goes up from the middle where there is an opening on top. Through this process, stack ventilation is functioning without any disturbances.



### Cross ventilation

The illustration shows the cross ventilation strategy. Cross ventilation is achieved using windows on both sides of the room, creating a current of air across the room. If the windows on both sides of the room are open, the overpressure on the side of the building facing into the wind, and/or low pressure on the opposite, sheltered side, will create a current of air through the room from the exposed side to the sheltered side. To ensure optimal airflow with as few drafts as possible, the windows on the side of the building that is facing the wind are not opened as much as the windows on the sheltered side.



# KING REACH

## Commercial Hotel Project

Professional Work  
Client-King Reach Hotels  
April, 2021

The King Reach hotel in Thissamaharama was proposed to be built near the Thissamaharama Lake which is a well known tourist attraction. As per the client requirement, he wanted to provide a calm and relaxing environment for the visitors who are coming to stay as well as an enjoyable environment for the visitors who only visit while passing by. Therefore, to cater both users, the hotel has been designed in to two structures. One structure will cater the public amenities such as lobby, restaurant, bar and gathering spaces. The second building is designed to accommodate guests who are coming for stay over. The building consists of 15 rooms including 12 double bedrooms and 3 suites. All the rooms are provided with a view to the lake.

within the two structures, a narrow pathway had been kept as the entrance to provide an exciting transition from the main road to the lake side. Along the lake side, landscaping was prioritized to enhance the natural environment. The deck along the lake is directly connected to both structures to provide better circulation. Currently, the project is ongoing with the ground floor structure being almost completed and it is expected to be completed by the end of 2022.

As the site being near to the lake, structure was designed to be constructed in concrete to increase strength and durability. The indoor furnishing has been separately designed and the main material to be used is timber.

### Ongoing Construction



# M2M

Royal Norwegian Embassy of Sri Lanka  
Professional Work at MAARAA Architects  
Client - M2M  
Completion-2022

Inspired by vibrant Norwegian forests, modern office space created in verandah offices Colombo for the Royal Norwegian Embassy of Sri Lanka.

Wall Street Enterprises and MAARAA These two firms have joined forces for this project, with Wall Street Enterprises taking the lead on the overarching design vision and MAARAA handling the local design specifics and project management. This partnership ensures that the design aligns with both Norwegian aesthetics and local context.

## Local Design and Project Execution

Uditha Makevita  
Charaka Jayasena  
Malan Ilangarathna  
Team of local professionals was responsible for translating the Norwegian design vision into a functional office space within the Sri Lankan context. They managed the project's execution, ensuring that it adhered to local building standards and regulations while maintaining the aesthetic quality.

Project Drawings are not included due to Non Disclosure Agreements of security reasons since those are Highly protected Government Properties.



# TWIN HOUSE

## Personalized House Design

Professional Work

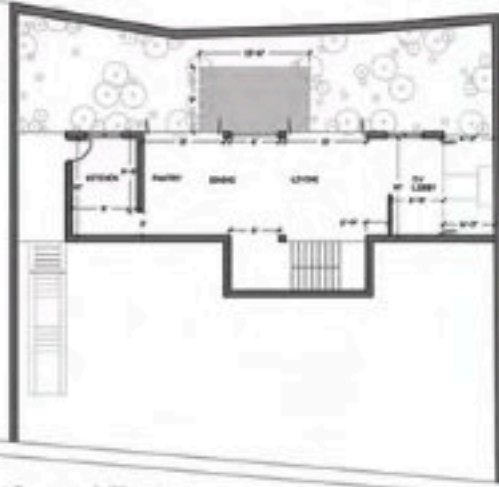
Client-Mr.Thilak Padmasiri

June, 2020

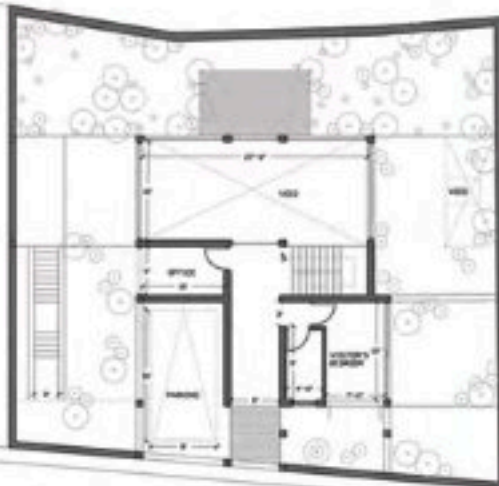
This three bedroom house was designed for a family of three. A simple contemporary house with a combination of traditional elements. The land was 8 perches and was located near the kadawatha town was located right next to a wetland. The site was sloped, which was included as it is to reduce land filling and cutting. The house is designed in three levels to work with the natural slope.

As per the spatial planning, from the entrance the client will be entered in to a 16ft double height space open to the natural environment which will increase the perspective of volume within house. On the lowest level, living, dining and kitchen area are arranged in a linear pathway.

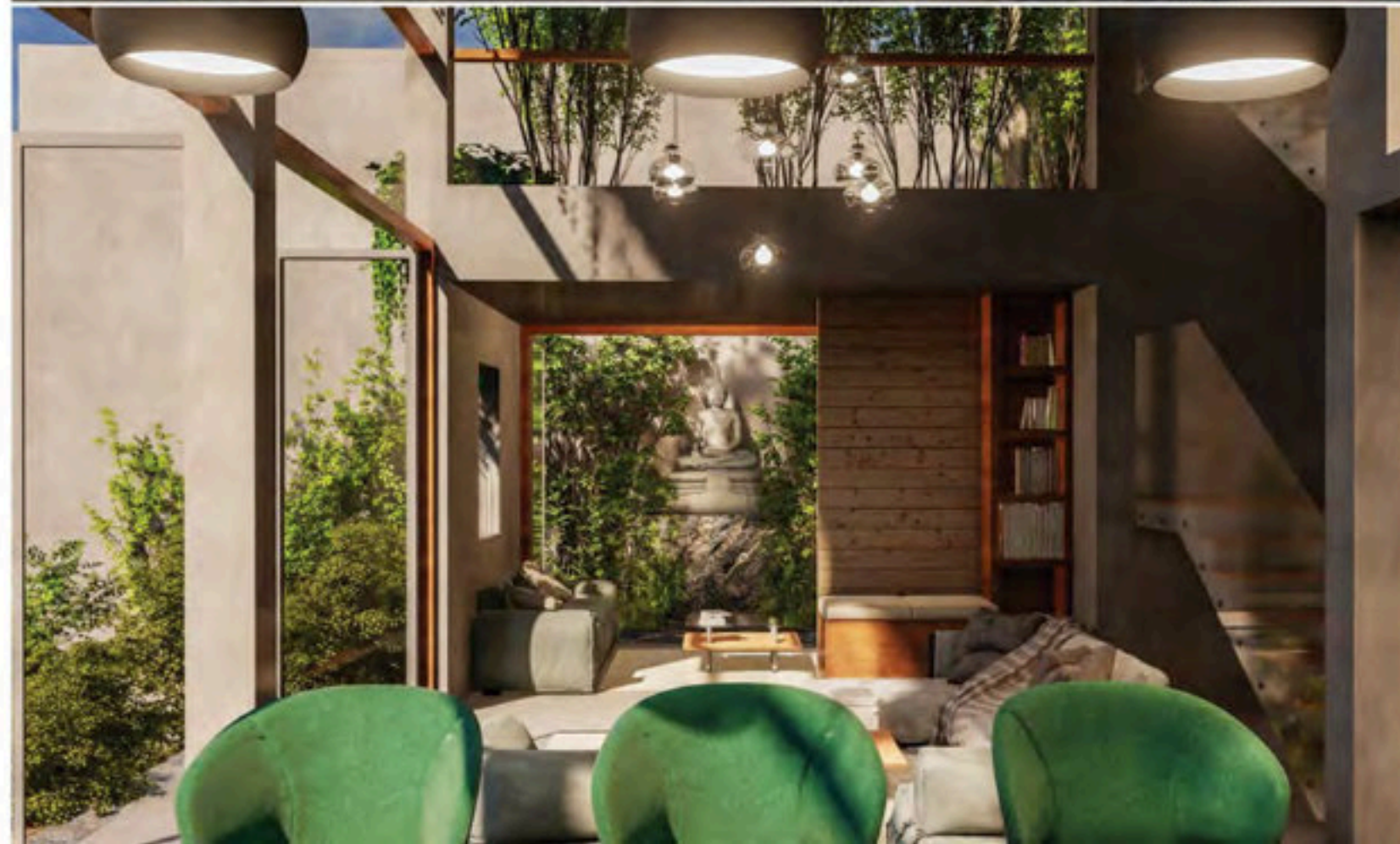
Additionally, the house was designed to have the possibility to extend the spaces later with the clients requirements and budget.



Lower Ground Floor



Ground Floor



# FAMILY NEST

## Personalized House Design

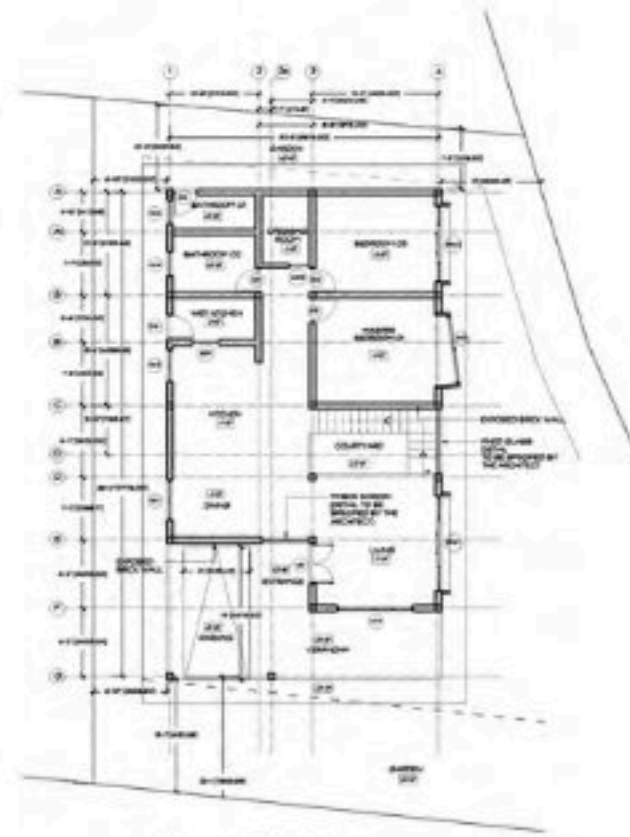
Professional Work  
Client-Mr.Shohan De Silva  
January, 2023

### Design

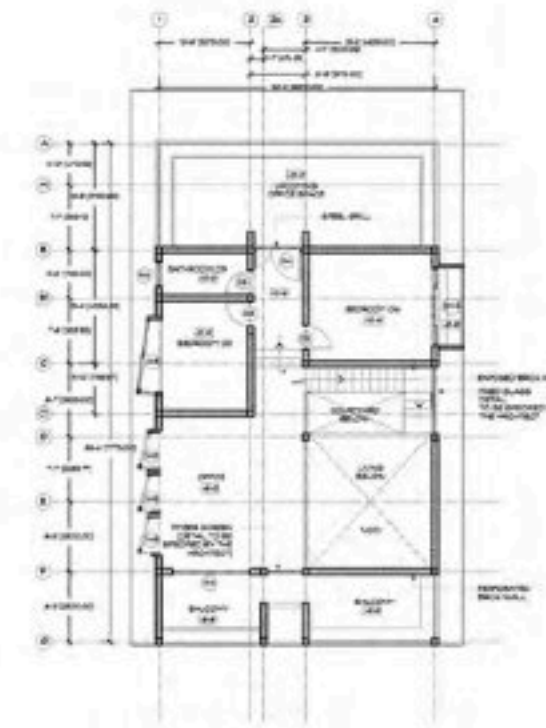
This personalized two storey house was designed for a newly married couple and for their parents. The client, Mr.De Silva and his family wanted it to be simple and creative spaces with modern architecture.

The site was located next to a paddy field in a green environment in Kurunegala and capturing that view of nature was considered important. Being a family of five, The client's has requested 4 bed rooms, Living Dining Kitchen with store room and personal working space. Mr.De Silva is an online worker as a Photo/Video Retoucher, who wanted an working space on the first floor with a sky light which should feels like a mezzanine floor. In order to achieve that, the ratio of stories are taken as the ground floor height is lower than first floor height. Apart from the common spaces within the house, three large balconies provided for the family to enjoy the leisure times.

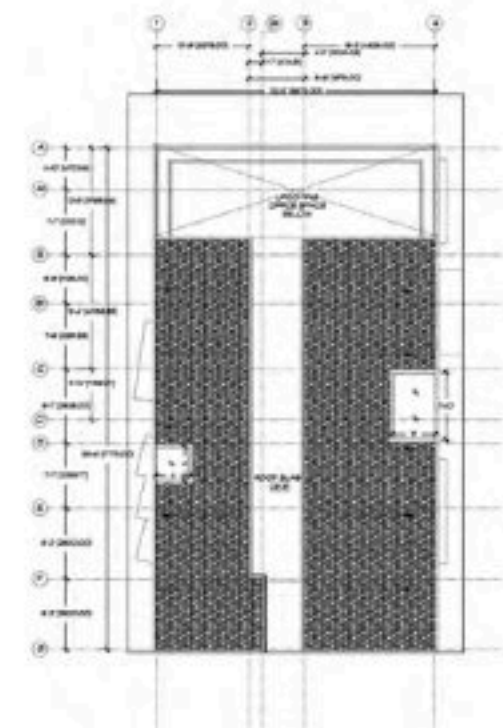
Furthermore, this house consists of an indoor courtyard on the ground floor. Using of natural light and natural ventilation will help to maintain the courtyard with greenary. The construction of this house has started in the beginning of 2023 and is expected to be completed in the next year.



Ground Floor Plan



First Floor Plan



Roof Plan

### Proposal



### Ongoing construction



Thank You !!