

STREAK

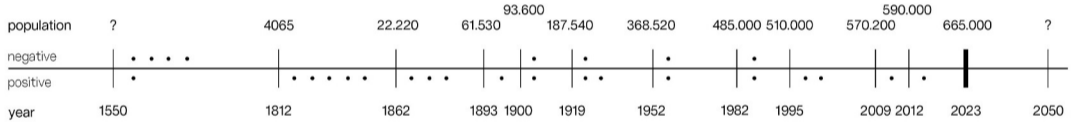
Saint Gobain Architecture Student Contest
Team Serbia Arch. Luka Stevanović / prof. mr Dušan Ignjatović
Helsinki, Finland
April 2024



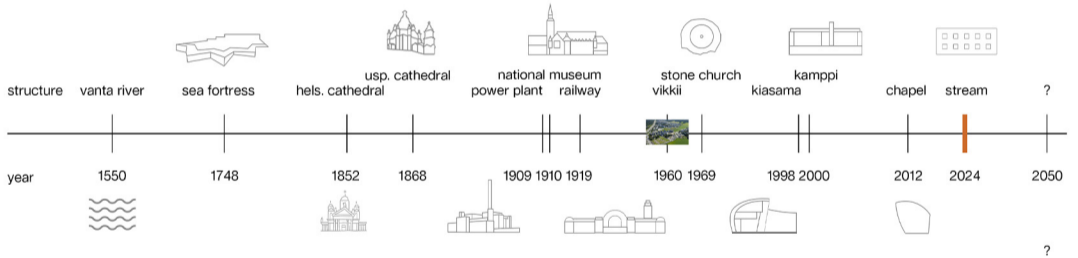


HISTORY

HELSINKI HISTORY TIMELINE



HELSINKI STRUCTURE TIMELINE



OLD SITE PLAN R 1:2500

VIKKI CLOSE UP

The location itself, was consisted out of 5 diametrically different entities, listed as A,B,C,D,E.

- A - Curved object planned for revitalisation
- B - Two objects planned for demolition
- C - Old museum planned for revitalisation
- D - "Gardenia" - planned to remain functioning
- E - Japanese garden planned to remain functioning

What was obvious on first sight is that all those units have very little, or nothing in common, so idea was to keep every vital parts of site, renovate it, add housing and

...put everything under the same roof.





CONCEPT



HELSINGEFORS

HELSINGE **FOR**S

HELSINKI **STREAMS**

..all under the **SAME ROOF!**

"Define a philosophical approach and then we used that as a sort of UMBRELLA under which to operate"

- David Chipperfield on Jury Chair interviewed by Mohsen Mostafavi

Idea is simple, take the heritage, protect it and upgrade it so we can **see, feel, hear and breathe** our beloved Helsinki.

In order to do so, first we need to define our **MAIN MOTIVES** which are related to

...**understanding the existing environment and structures.**





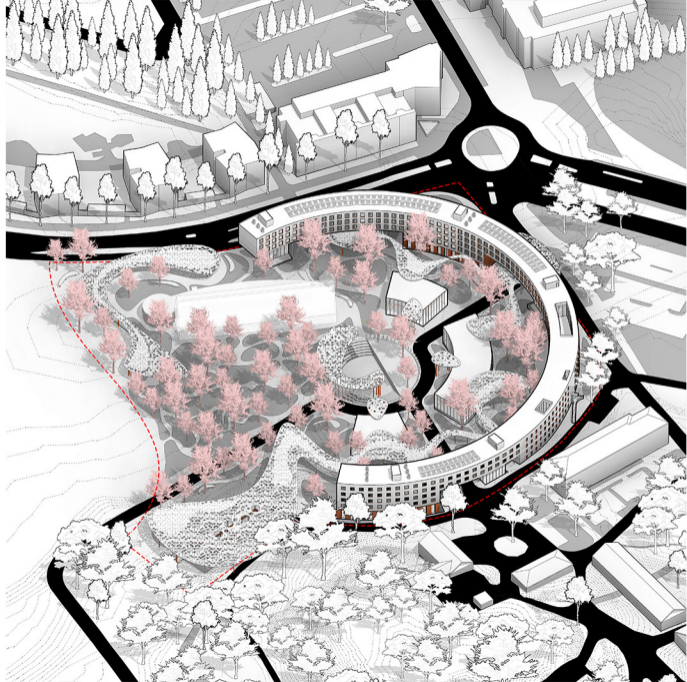
DIVERSITY SHIELD

So what are the main motives?

NATURE COMES FIRST, since Helsinki is very eco/nature friendly environment, the project will enhance nature from existing site and make **comprehensive stroke throughout the whole complex**. That will provide very comfortable environment to live/work/visit.

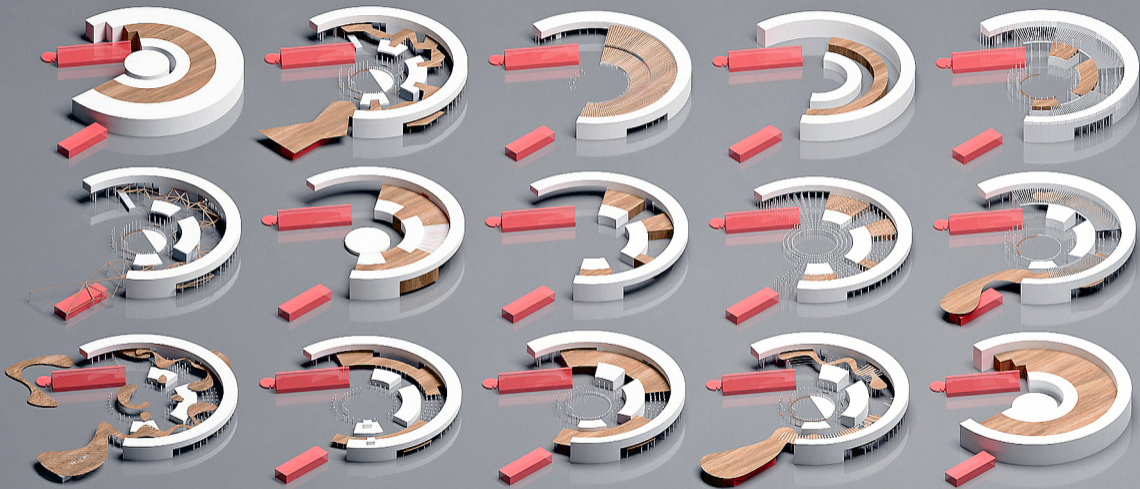
In order to **PROTECT** central natural habitat, existing structures are connected, following the radius of curved research building from "section A". Unified structure represents **SHIELD**, projected for housing, with living units facing **SOUTH** and hallways and communications facing **NORTH**, that way

... the diversity is **UNIFIED**





DEVELOPMENT



In Order to get ideal positioning of existing and new structures, there was a lot of **TESTING!**



Cradle to gate impacts (A1-A3)		kg CO ₂ e/m ²
(+ 338) A		289
(338-364) B		
(364-390) C		
(390-416) D		
(416-443) E		
(443-469) F		
(+ 469) G		

1,2,3,4 GO! DIAGRAMS

The whole project, we can explain throughout four simple diagrams, in order to show the connection between processes.

1. EXISTING SITE

The original site was divided into five different parts, initial idea was finding the way to CONNECT diversity.

2. NATURE ADDITION

Main motive of project is Helsinki nature environment, the addition happened to enhance what needed to be protected.

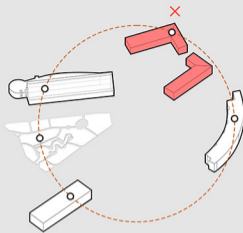
3. UNITING STRUCTURES

In order to connect diversity, the complex is separated from private to public sectors with interactive perforated roof-like structure.

4. FINAL FORM

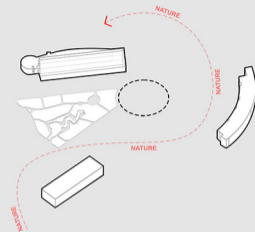
Final form provided what was missing on site, protection for cultural heritage and needed space for living/working urban life.

... so we have everything in one place!



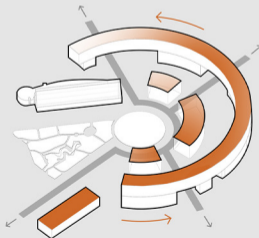
1.

actual site / plan



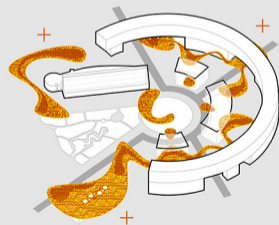
2.

nature addition



3.

uniting structures



4.

final form

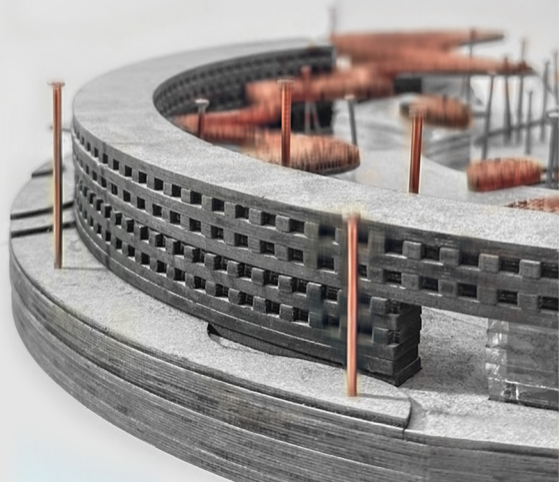


..lets get **PHYSICAL!**

In order to test 3d model analysis, the physical model was made, and that served for dimensional/statical challenge. It was concluded that "form research" was efficient, so the drawings and technical systems could be implemented into project.

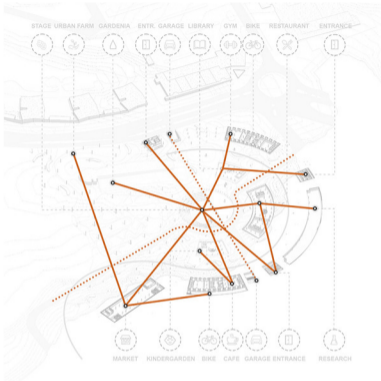
... the result was human-like architecture!

physical model photo





PLAN

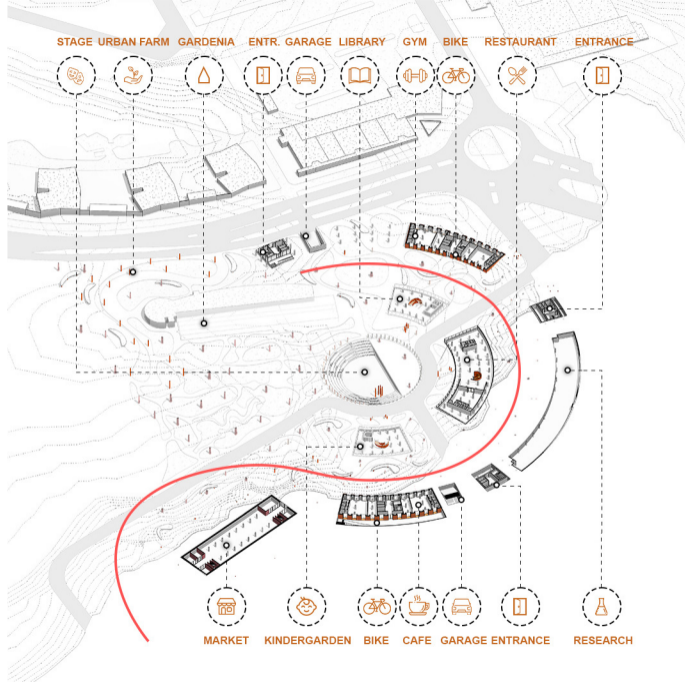


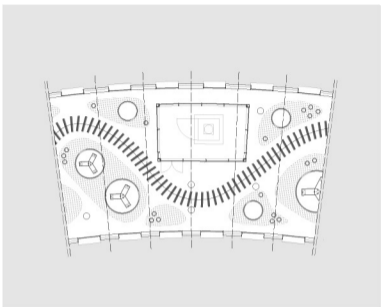
1. RENOVATION!

Since the renovation is very big and important part of this architectural proposal, it is treated with great caution. It is divided in three major parts, not including the demolition of corner object which also existed on site.

- 1.1. RESEARCH BUILDING
- 1.2. OLD MUSEUM
- 1.3. URBAN FARMING PARK EXTENSION

... it's all about efficiency!



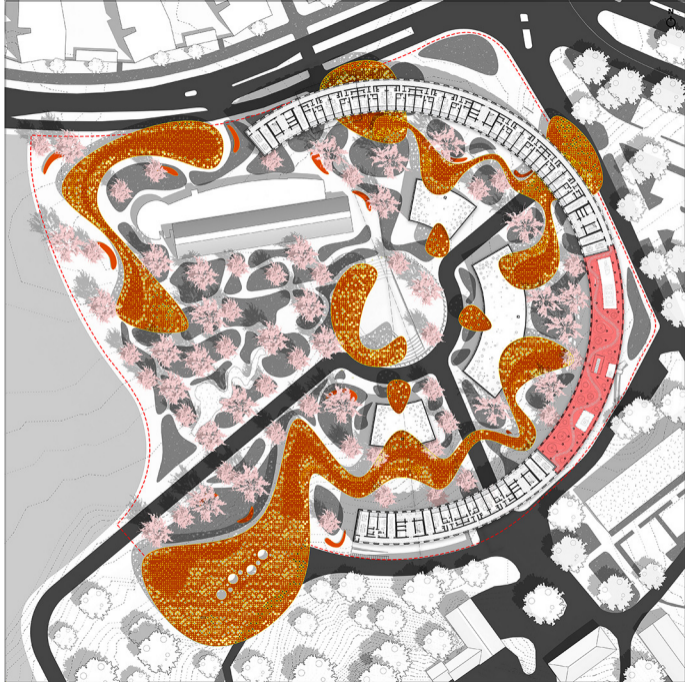


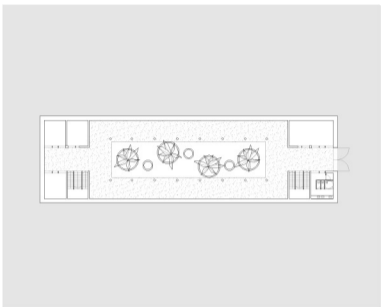
1.1 Don't forget the **ROOF!**

First part of renovation is saving the roof of an existing research building, adding the activities of the same typology - SCIENCE AND RESEARCH, as part of the intervention there is ISOVER GREEN SOLUTION with ECOPHON dense acoustic boards.

... so finally the ceiling CAN hold us!







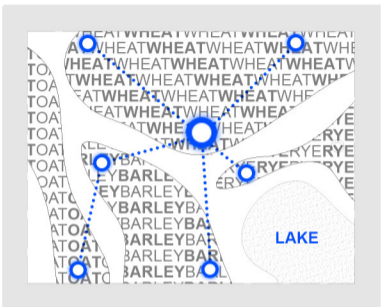
1.2 Preserve the **OLD MUSEUM!**

With the new informations coming, it is established that the old museum shouldn't be part of drastic interventions form-wise. So it's content is being transformed into the easy removable market for home made products in complex!

... so nothing is going to waste!





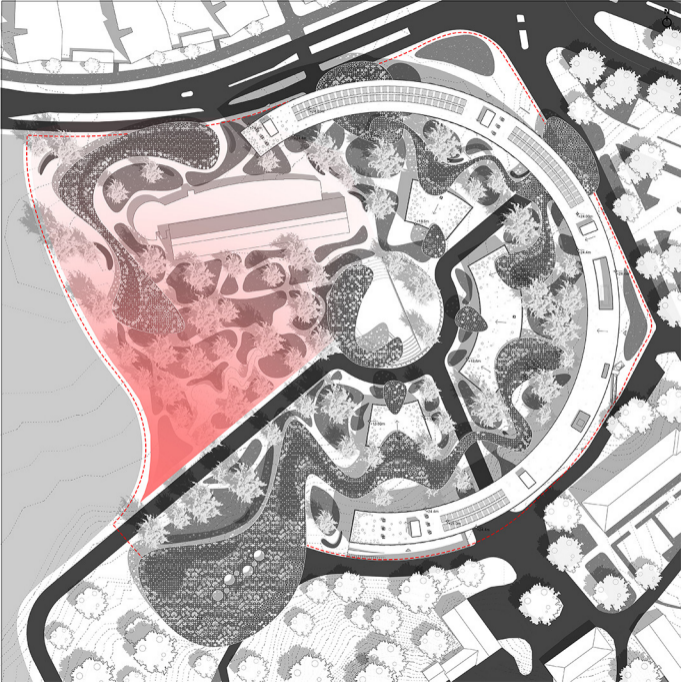


1.3 Contribute with **URBAN FARMING**

The existing park was absolutely revived, with contemporary farming methods. Since Finland is leader in producing BARLEY, OAT, WHEAT, and RYE, these are the types of herbs that will be distributed on these urban eko fields.

... of course Finland leads in OATS!





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(< 338) A	289
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(416-443) E	
(443-469) F	
(> 469) G	

2. NEW CONSTRUCTION

With demanded new construction, it is provided heterogenous content, which was projected by human-scale rational principles that were analysed and executed.

2.1 SEMI-PUBLIC

- 2.1.1 GARAGE
- 2.1.2 CAFE
- 2.1.3 LIBRARY
- 2.1.4 KINDERGARDEN
- 2.1.5 RESTAURANT
- 2.1.6 FITNESS
- 2.1.7 SUMMER STAGE

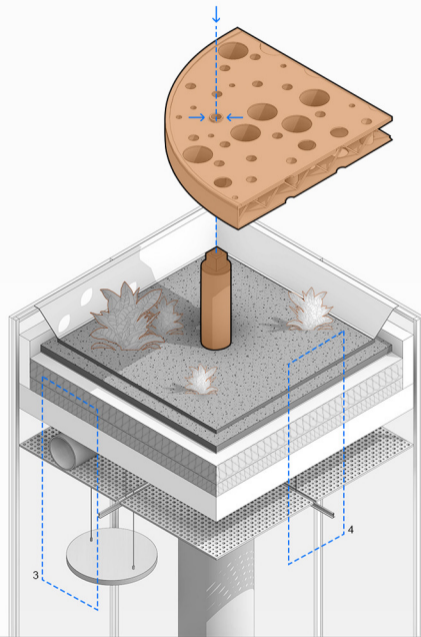
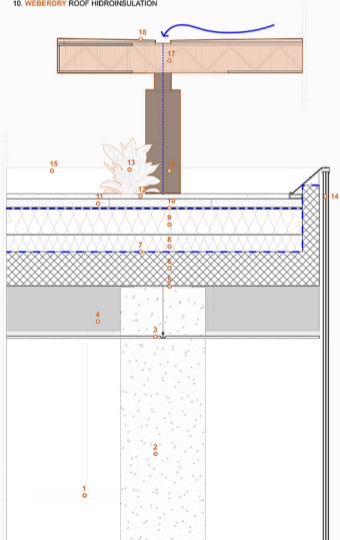
2.2 HOUSING

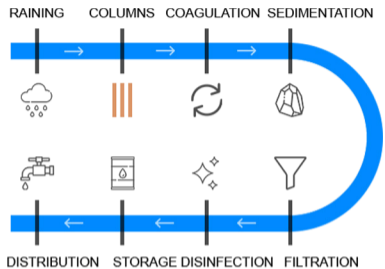
- 2.2.1 TYPE 1
- 2.2.2 TYPE 2
- 2.2.3 TYPE 3
- 2.2.4 GREEN ROOM
- 2.2.5 WORK ROOM

... it's all about efficiency!



- | | |
|--|---|
| <ol style="list-style-type: none"> 1. ECOPHON SOLO CIRCLE 4cm 2. ECOPHON ALCUSTIC PLASTER 3. RIGIPS RIGITON ACTIV AIR SUPER R 1.2cm 4. VENTILATION PIPE Ø24cm 5. DILATION PLATE 0.2cm 6. RECYCLED REINFORCED CONCRETE 20cm 7. ISOVER VAPOUR BARRIER VARIO DUPLEX 8. ISOVER EPS THERMAL INSULATION 10cm 9. ISOVER EPS THERMAL INSULATION 15cm 10. WEBERDRY ROOF HIDROINSULATION | <ol style="list-style-type: none"> 11. ISOVER FLORA HYDROPHILIC PANELS 5cm 12. LECA MURSKE SUBSTRATE 3cm 13. EXTENSIVE VEGETATION 14. SAINT GB. GLASS C-LITE ORAE 3-LAYER 15. ALUMINIUM COVERING 16. CORTEN SHALLOW COLUMN Ø20cm 17. CORTEN TRUSS 18. SAINT GB. GLASS ECO PRO 1-LAYER |
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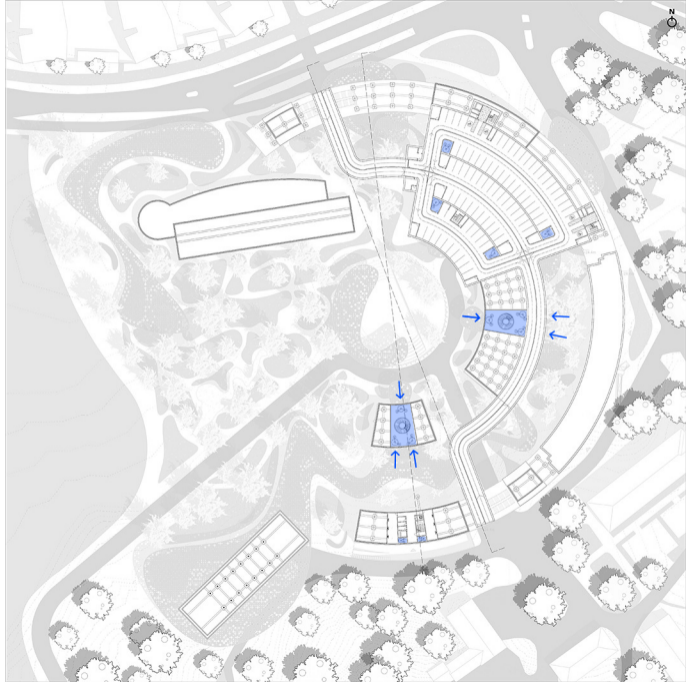


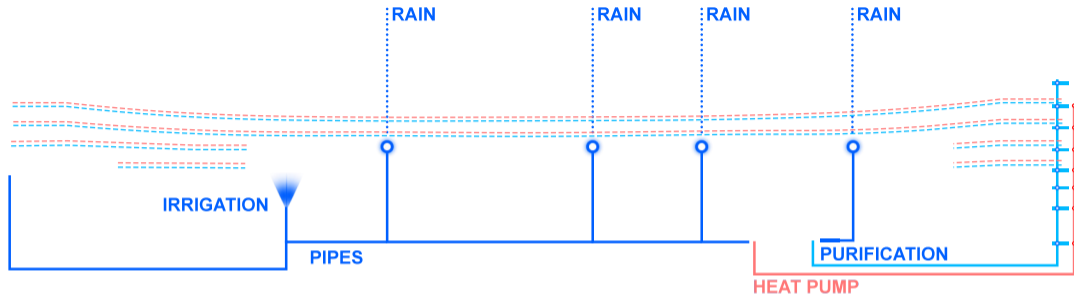


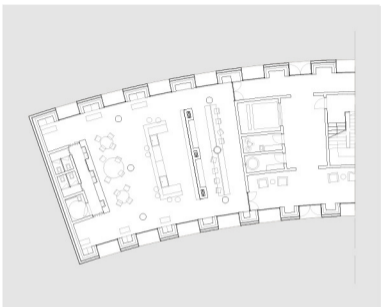
2.1.1 GARAGE

By classification, garage is "large". It has more than 400m² with capacity of 86 parking slots, that include 4 parking slots for people with special needs. Since its class and capacity it contains several technical rooms and two entrances/exits with three fire escape staircases.

... take care of your vehicles!







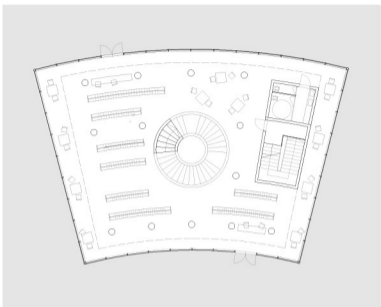
     

2.1.2 CAFE

If you want break after hard day at research facility, or you want to study remotely, here is contemporary green cafeteria is open 24/7 to serve your needs.

... just take care with caffeine!





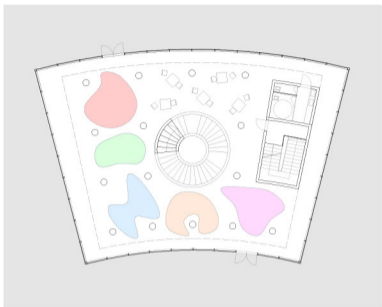
gyproc **isover** **ecophon** **rigips** **aweber** **glassolutions**

2.1.3 LIBRARY

Part of Finnish culture is definitely reading, so as part of semi-public contents, the complex has its own library that is supplemented by literature that university students need, but also some other best-selling books..

... because who doesn't love good old novels!





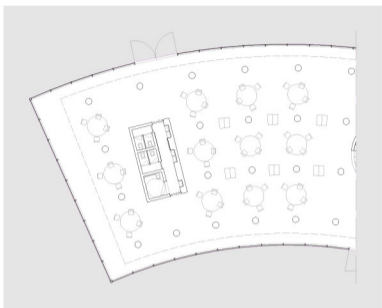
     

2.1.4 KINDERGARDEN

Observe your kids from the comfort of your own home, very transparent and safe structure of kindergarden allows you to take rest from your work, and don't worry about safety of your child. Besides, your kid will meet new friends from neighbourhood and socialise.

... kids stay home alone, not anymore!





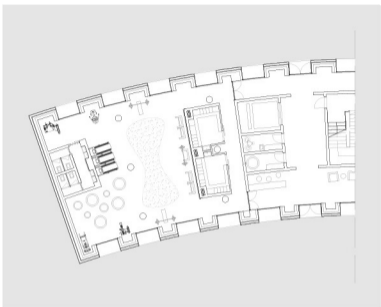
gyproc **isover** **ecophon** **rigips** **aweber** **glassolutions**

2.1.5 RESTAURANT

Having cravings about your favorite food, or you just finished your workout and need proteins to gain muscles, welcome to the very bright and open restaurant in the middle of the complex.

... it is very close, so you can visit it often!





gyproc **isover** **ecophon** **rigjps** **weber** **glassolutions**

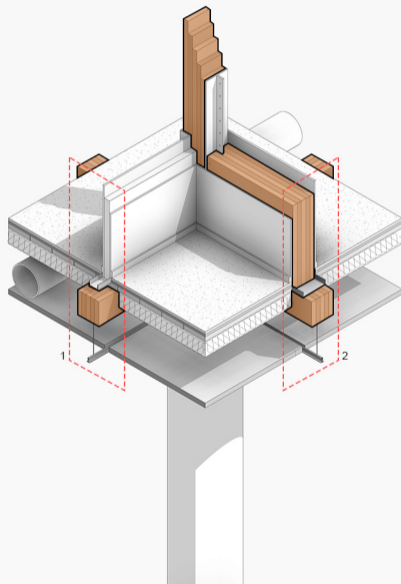
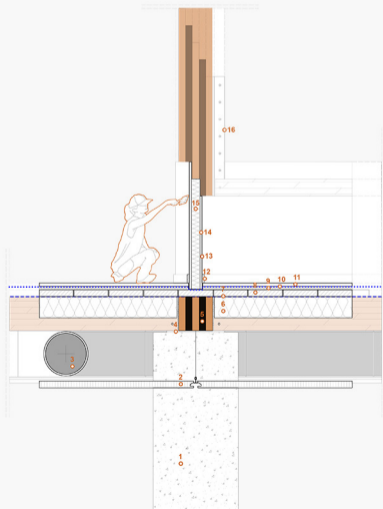
2.1.6 FITNESS CENTER

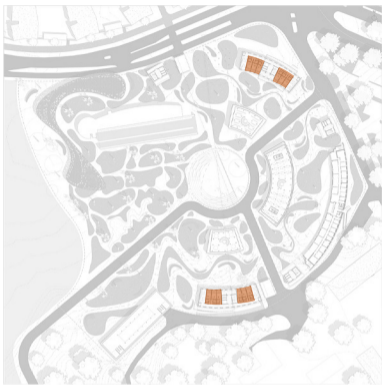
Healthy lifestyle is part of Finnish everyday mentality, so the complex offers, as part of residential building, non stop fitness center which is nearby the restaurant. You can't miss it, because its very spacious and stylish!

... no excuses, meet me at 5pm!



- | | |
|--|---|
| <ol style="list-style-type: none"> 1. ECOPHON ACUSTIC PLASTER 2. ECOPHON MASTER EG 4cm 3. VENTILATION PIPE 104cm 4. DILATION PLATE 0.2cm 5. CLT CONSTRUCTIVE BEAM 5-LAYER 20cm 6. ISOVER EXTREME 31 T INSULATION 12.5cm 7. ISOVER VAPOUR BARRIER VARIO DUPLEX 8. CLT COUNTER BEAM 1-LAYER 4cm 9. ISOVER FLO SOUND INSULATION 2cm 10. WEBERDRY PUR SEAL HYDROINSULATION | <ol style="list-style-type: none"> 11. RECYCLED TERAZO TILES 3cm 12. RECYCLED CLT MOLDING 1cm 13. GYPROC CH 13 HABITO BOARD 1.25cm 14. WEBER PREMIUM POLICOLOR LATEX 15. ISOVER PREMIUM THERMAL INSULATION 5cm 16. INOX SUBCONSTRUCTION |
|--|---|

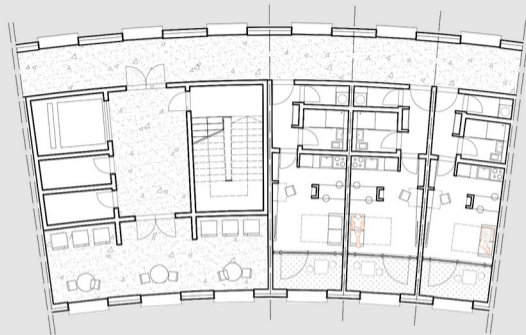




2.2.1 TYPE 1 HOUSING

Single bed student/researcher or couple with low budget, this 33.4m² apartment offers all the comfort you need with private terrace that can open during summer and close during winter days.

... for those who prefer micro-housing!



PLAN - APARTMENT TYPE 1

ROOMS	AREA	
entrance hall	4.741	m ²
laundry room	1.781	m ²
bathroom	3.597	m ²
kitchen + dining room	3.797	m ²
dining room	/	m ²
sleeping room	/	m ²
living room	8.808	m ²
terrace	4.822	m ²
NETO	27.546	m ²
BRUTO	33.4	m ²





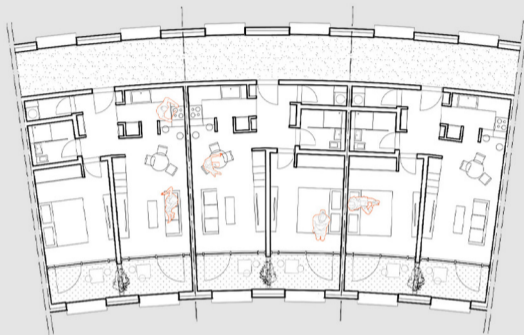





2.2.2 TYPE 2 HOUSING

This type offers much more flexibility with two separate sections - day and night, its is compatible with different structure of tenants, from one person up to four. Also every section has its own terrace that can open during summer and close during winter.

... most wanted apartment by analysis!



PLAN - APARTMENT TYPE 2

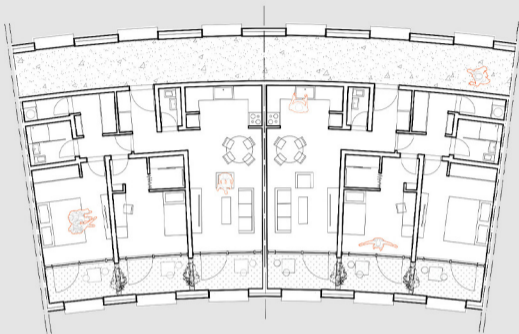
ROOMS	AREA
entrance hall	5.319 m ²
laundry room	1.808 m ²
bathroom	3.644 m ²
kitchen	5.826 m ²
dining room	5.015 m ²
sleeping room	13.922 m ²
living room	11.596 m ²
terrace	9.638 m ²
NETO	56.768 m ²
BRUTO	66.865 m ²



2.2.3 TYPE 3 HOUSING

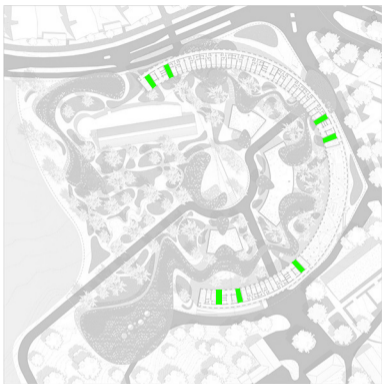
Type three is the most spacious one, offers space for many roomates or couples with kids, with two bathroom can be used in different ways, with three terraces offers great amount of light coming in.

... if you need space!



PLAN - APARTMENT TYPE 3

ROOMS	AREA
entrance hall	11.099 m ²
laundry room	4.059 m ²
bathroom	5.3 m ²
kitchen	6.37 m ²
dining room	6.559 m ²
sleeping room	25.421 m ²
living room	11.314 m ²
terrace	14.464 m ²
NETO	84.586 m ²
BRUTO	100.02 m ²





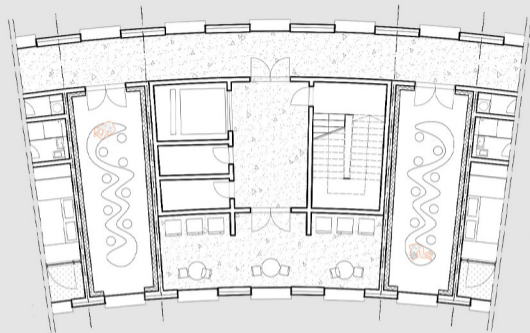




2.2.4 GREEN ROOM

On several places throughout the complex there is a green room for resting, it is supposed to be used by tenants that don't want to go out, but still need to relax with eco-friendly environment.

... green is the color that relaxes!



PLAN - REST (GREEN) ROOM

ROOMS	AREA
NETO	25.415 m ²
BRUTO	32.264 m ²





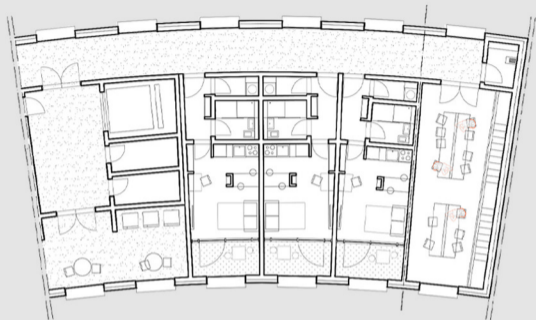




2.2.5 WORK ROOM

Also on several places near green rooms there are specially designed work areas, that include studying, reading, model making etc.

... every floor has at least 4 of those!



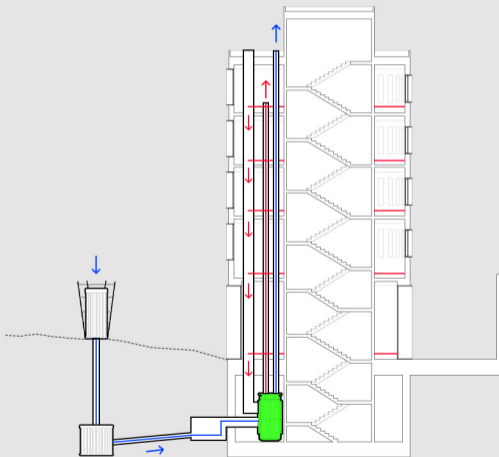
PLAN - WORKING ROOM

ROOMS	AREA
NETO	35.008 m ²
BRUTO	41.415 m ²

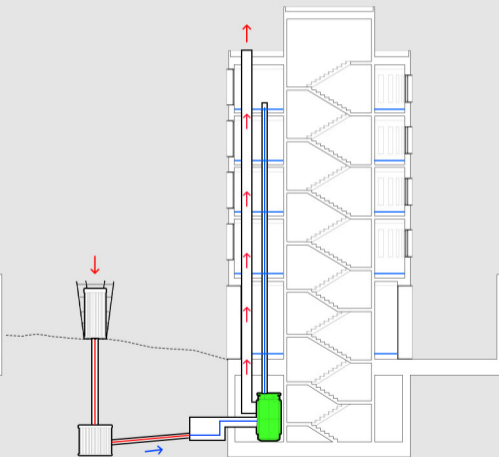
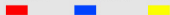
WINTER



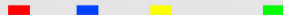
SUMMER



HOT AIR FRESH AIR EXHAUSTED AIR



HOT AIR FRESH AIR EXHAUSTED AIR RECUPERATOR



FACADE WALL 1

corten panels on subconstr. 20cm
thermal ins. ISOVER PLA NT 20cm
reinforced recycled concrete 20cm
inner plaster ECOPHON FADE DUO 1.5cm

U= 0.153 W/m2K

FACADE WALL 2

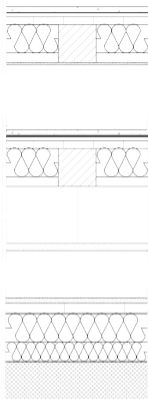
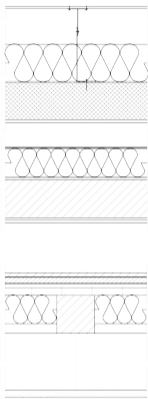
facade plaster WEBER WEBERTENE REF.
reinf. net WEBER WEBERTHERM
thermal ins. ISOVER PLA NT 15cm
ti glue WEBER WEBERTHERM PRESTIGE
gypsum board GYPROC GLASROC GTX 0.95cm
cross laminated timber 20cm
gypsum board GYPROC GH13 HABITO 1.25cm
inner plaster ECOPHON FADE DUO 1.5cm

U= 0.155 W/m2K

FLOOR CONSTRUCTION 1

spruce parquet floor 2cm
parquet floor glue WEBERFLOOR PARKETOFIX
cement screed 3cm
hydroinsulation WEBERDRY PUR SEAL HI
sound insulation ISOVER FLO 2cm
clt couter beam 4cm
cross laminated timber 20cm
vapour barrier ISOVER VARIO DUPLEX
thermal insulation ISOVER EXTREME 31 T 15cm
densed ceiling ECOPHON MASTER EG 30+4cm

U= 0.206 W/m2K



FLOOR CONSTRUCTION 2

recycled terazzo tiles 2cm
hydroinsulation WEBERDRY PUR SEAL HI
sound insulation ISOVER FLO 2cm
clt couter beam 4cm
cross laminated timber 20cm
vapour barrier ISOVER VARIO DUPLEX
thermal insulation ISOVER EXTREME 31 T 15cm
gypsum board GYPROC GLASROC H 1.25cm

U= 0.164 W/m2K

FLOOR CONSTRUCTION 3

recycled terazzo tiles 2cm
hydroinsulation WEBERDRY PUR SEAL HI
sound insulation ISOVER FLO 2cm
clt couter beam 4cm
cross laminated timber 20cm
vapour barrier ISOVER VARIO DUPLEX
thermal insulation ISOVER EXTREME 31 T 15cm
densed ceiling ECOPHON MASTER EG 30+4cm

U= 0.169 W/m2K

GREEN ROOF

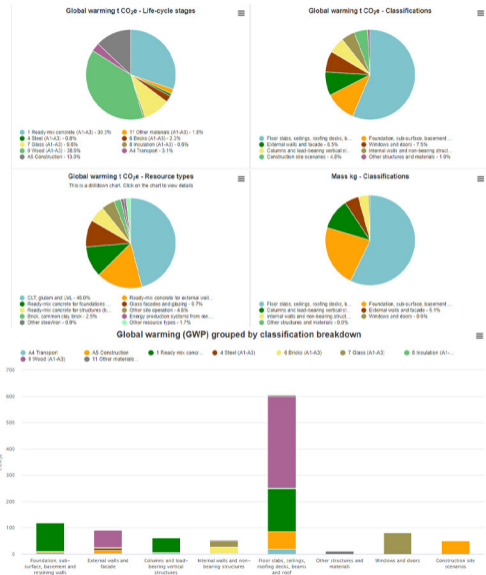
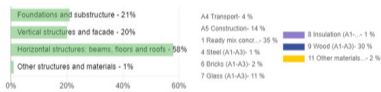
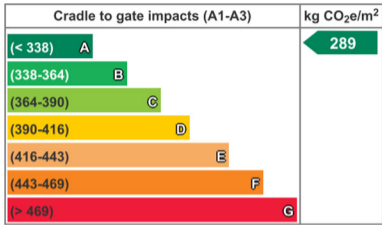
extensive vegetation
substrate LECA MURSKE 3cm
hydrophilic panels ISOVER FLORA 5cm
hydroinsulation WEBERDRY ROOF HI
thermal insulation ISOVER EPS TI 15cm
thermal insulation ISOVER EPS TI 10cm
vapour barrier ISOVER VARIO DUPLEX
recycled reinforced concrete 20cm

U= 0.126 W/m2K

LCA INPUTS

In order to use the software and calculate the efficiency and sustainable tier of our building, here are some positions with used products

... so every position is Saint-Gobain compatible



ONE CLICK LCA

Very easy-to-use, One click LCA software helped in calculating and creating these diagrams of efficiency.

... so we can mke sure that everything is optimal!



S. Gebanobuk