URBAN REGULATIONS AND REQUIRED PROGRAM SCHEME ANALYSIS

Given the fact that the tender for the anticipated facility is one of the first project initiatives for the largest urban area reorganization in the city of Ljubljana and that there are no buildings yet at the present location, which would be constructed in accordance with a completed master plan or urban documentation in the process of being adopted, the restrictions for the location itself are more of a general nature. Under the urban acts, which are in the final proceeding, the percentage for the urbanization of the area, some restrictions for the templates, the attachment to the newly anticipated infrastructure and the construction of the surroundings are defined. The competition brief contains the share of surfaces for each program and also leaves some room for consideration of any other content of building. A more detailed design of the starting points for the building plan is open enough, which is very welcome due to the quality of the location considered.

50% HOUSING

30% PUBLIC PROGRAM

15% GALLERY

5% LIBRARY

ADDITIONAL REQUIREMENTS DERIVING FROM ANALYSIS

As mentioned, the urban regulations and competition brief sets partial frameworks and restrictions into place, which must be taken into consideration when designing the building. Besides the templates and program schemes shown, we have added some additional parameters or demands as the basic starting points due to the significance and the specific character of the location, for which we believe are of particular importance in order to achieve the expected high quality of the facility at this particular location.

100% PARK VIEW FROM APARTMENTS

The carrying quality of the location considered is no doubt the new city park, in which the surrounding apartments and a public program are oriented towards. As it is evident from related cases around the world, apartment buildings in this type of location can reach very high prices, since the park greatly increases the quality of living by creating a mild microclimate. Apartments with a view overlooking the park are especially wanted, which is also reflected in a significant increase in the market value. Due to the unique location of the apartments, we must not divide them into primary and secondary apartments but they should be organized in a way so that all will have a direct view of the park.

100% DOUBLE SIDED APARTMENTS

In providing an effective sustainable scheme, which is of outmost importance today, it is necessary to take into consideration that over 50% of the program area is intended for apartments. Due to the specifics regarding use, it is more difficult to subject the apartments to technological control of energy efficiency than the public program. For apartments, the most important thing is maintaining a favourable microclimate and low energy consumption in a natural way already with the architectural design itself. One of the more important conditions for achieving high sustainable performance is good natural ventilation, which is achieved easiest by having double sided apartments for cross ventilation. This is also particularly true for the area of Ljubljana, where the average winds are not strong but for most of the year hold a constant direction of movement of the air, which is perpendicular to the new facility. At the same time, the double-sided orientation of the apartment buildings also allows views for the residents on all sides, long and open internal views and creates a greater sense of spaciousness. These are all factors, which significantly contribute to the increase in the quality of living.

100% CONNECTION OF PUBLIC PROGRAM WITH THE PARK

Of course, we must not only focus on the apartments for the design of the facility but we must also reply to the same questions regarding the design of a quality public program. At this point, it is also valid that the park with all its good properties is the element, which will impact on the character of the facility the most. In accordance to the new urban city design for Ljubljana, which exposes more local urban centres that aren't more than 15 minutes away from each other (on foot), the new facility shall overtake this role for the area considered. The building combines the central functions of the park area so it is important that all public programs are also organized as a natural extension of the park and are directly related to it.

100% PARK VIEW FROM APPARTMENTS

100% DOUBLE SIDED APPARTMENTS FOR CROSS VENTILATION

100% CONNECTION OF PUBLIC PROGRAM WITH THE PARK

VOLUME DISPOSITION

100% DOUBLE SIDED APARTMENTS WITH 100% PARK VIEW

In order to achieve the desired uninterrupted view of the park, the apartments were moved to the very edge of the park and laid out in the lamella, which is 60 meters high, which is the maximum height allowed according to the urban regulations and 15 meters wide, which is the maximum depth that allows good lighting for the double-sided oriented apartments. The volume obtained in this manner, is not large enough for accommodating the required apartment area demanded with competition brief.

BIGGER APARTMENTS FOOTAGE LIKE DEMANDED IN BRIEF

Since part of the lot along the road is longer than the one by the park, the apartment lamella is moved back. In this manner, the view of the park is still uninterrupted and due to the increased volume we shall satisfy the needs for the required footage in the project task. A problem occurs in this instance because the resident's private garden on the roof of the public program only receives daylight in the morning at this type of volume distribution.

SPLIT APARTMENTS FOR BETTER SUNLIGHT ON GREEN ROOF

By distributing the volume of the apartments into two parts, whereby one is moved along the street and the other one along the park, we shall keep the required area and at the same time the sunlight for the garden shall be equally distributed between the morning and the afternoon.

BULKY PUBLIC PROGRAM VOLUME WITH NO CONNECTION TO THE PARK

The division of the volume of the apartments now corresponds to the desires and requirements but the volume of the public program under the apartment level is still undefined and has no real contact with the exterior. The great mass of the facility covers the entire available lot and because of its size and uniformity it does not communicate with the surroundings.

INCLINE OF VOLUME CREATES JUTTING ROOF OVER ALL PROGRAM EDGES

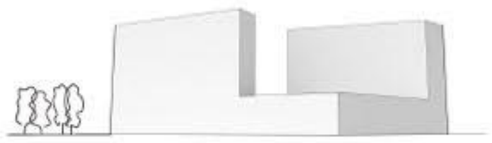
As the first step in implementing this contact, the bottom edge of the public program volume is moved a few meters to the inside along the entire circumference. In this way, all entrances to the building are covered with jutting roof and at the same time people do not have the sense that they are standing under a roof due to the height of the edge of the flange. The building is protecting them without interruptions and establishes a discreet relationship with visitors.

OPENING OF PROGRAM CREATES CONNECTION WITH PARK, NATURAL LIGHTING AND CROSS VENTILATION

Cutting and opening the volume allows for daylight to enter deep into the facility and opens a path for natural ventilation also on the ground floor of the public program. The incision system is designed in such a way so that the natural light penetrates throughout the entire depth of the building and also in the service areas of the apartment part of the facility. The ground floor of the program becomes a kind of new covered town plaza in which all entrances to different programs are in place. The area completely opens up and intertwines the building with the surrounding park setting.

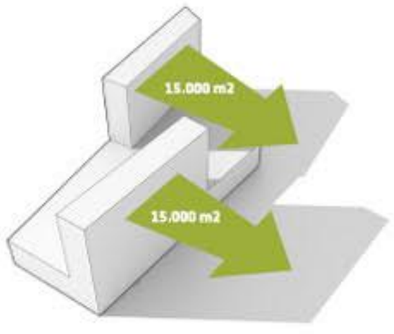
100% DOUBLE SIDED APARTMENTS WITH 100% PARK VIEW

BIGGER APPARTMENTS FOOTAGE LIKE DEMANDED IN BRIEF



BULKY PUBLIC PROGRAM VOLUME WITH NO CONECTION TO THE PARK

INCLINE OF VOLUME CREATES JUTTING ROOF OVER ALL PROGRAM EDGES



SPLIT APPARTMENTS FOR BETTER SUNLIGHT ON GREEN ROOF

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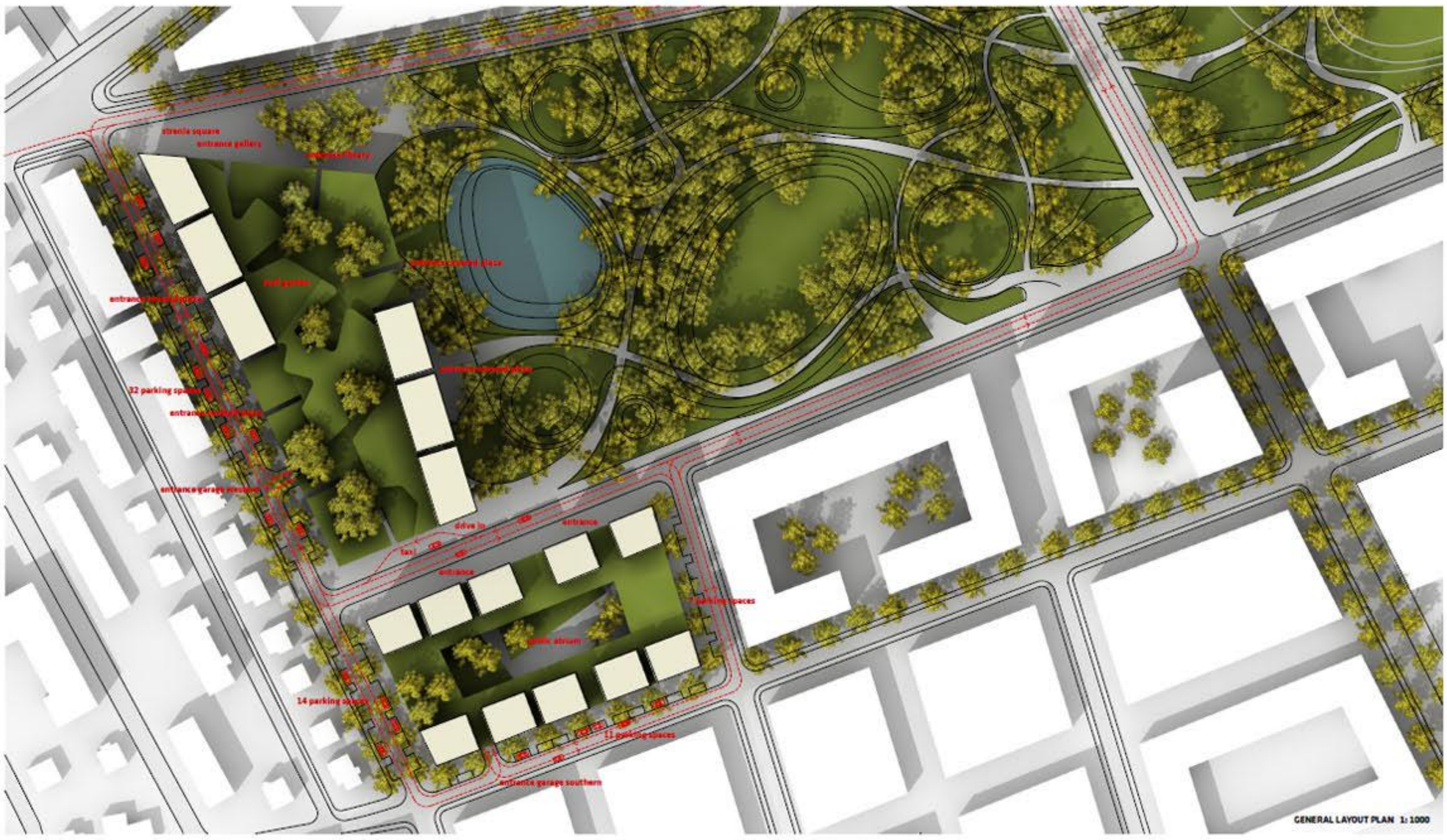
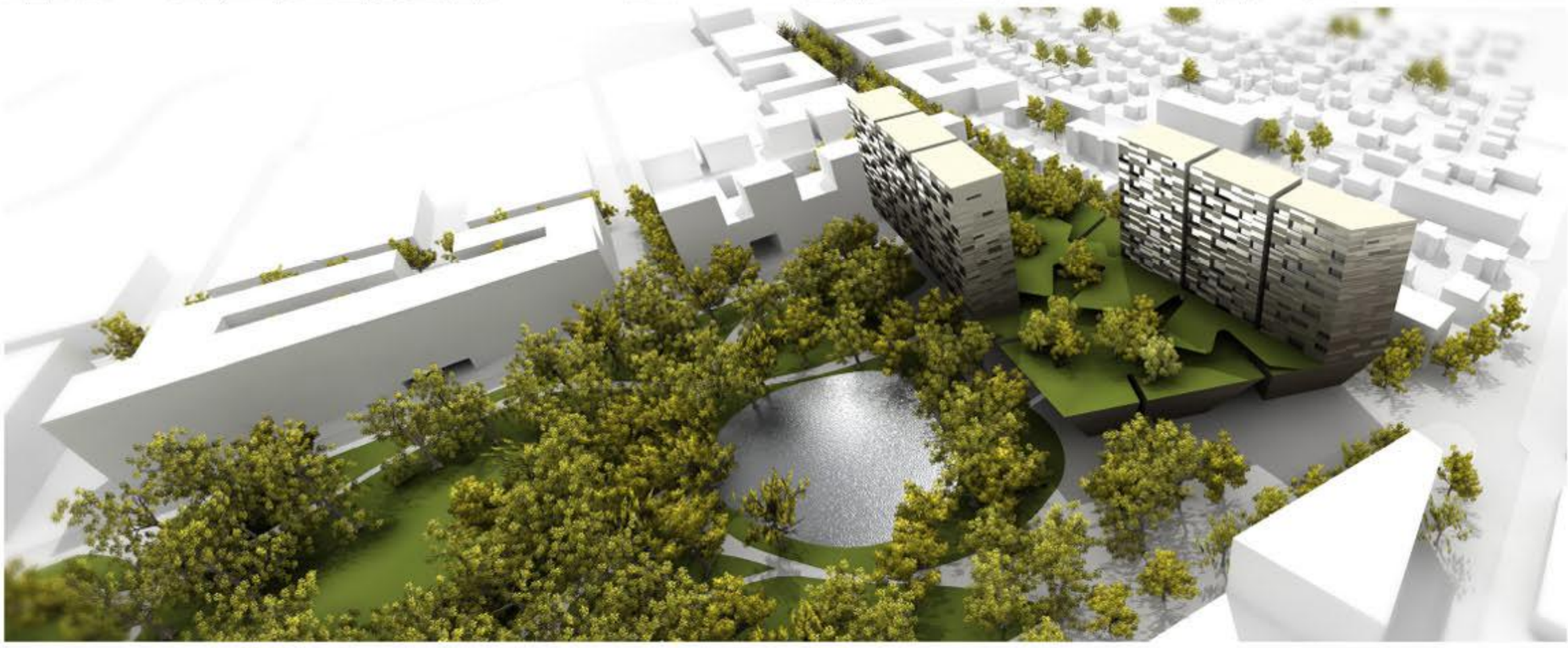


GENERAL LAYOUT PLAN 1: 1000



VOLUME = LANDMARK = NAME

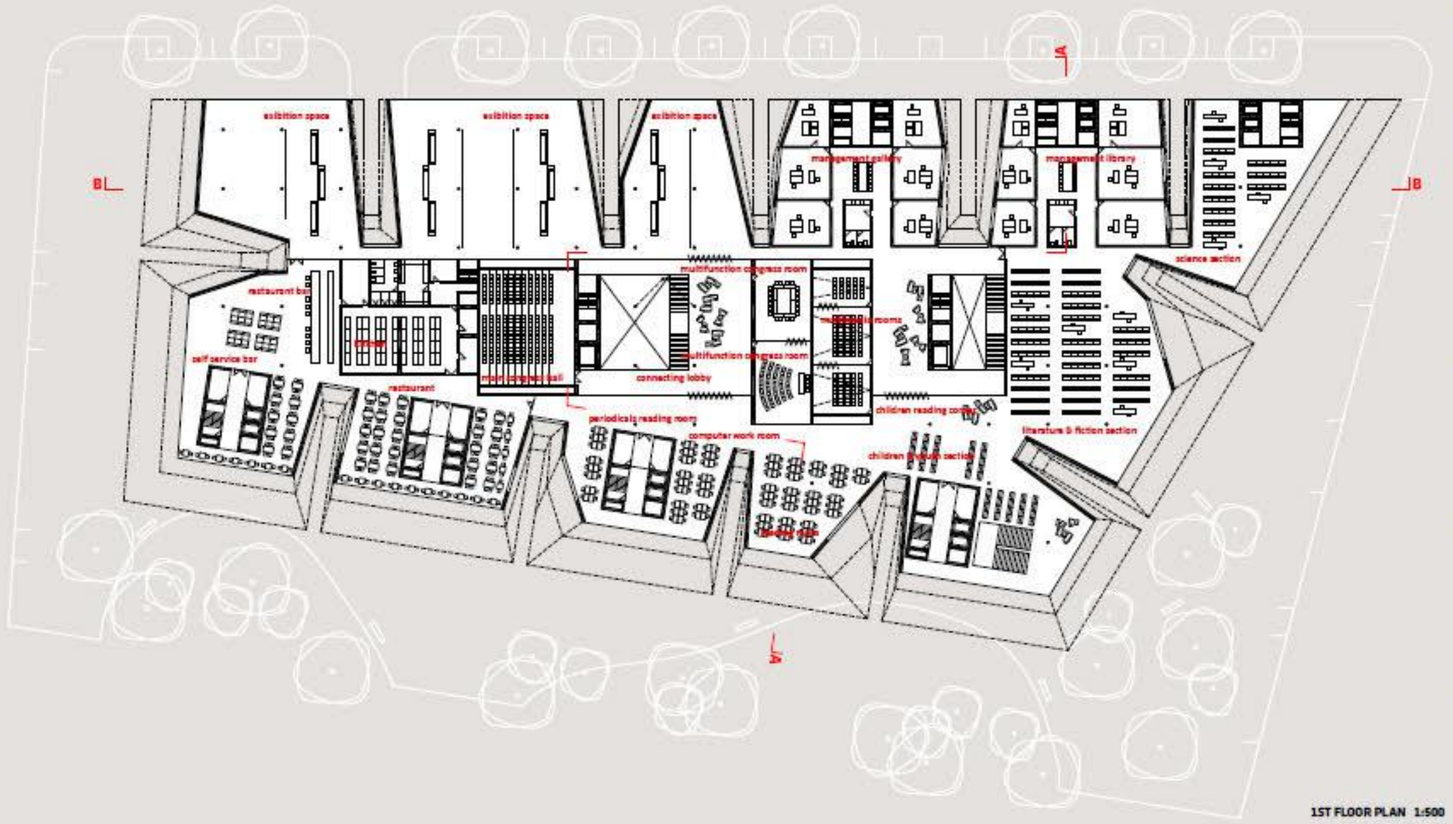
The result of rearranging the volumes according to the orientation of the program and its relationship with the park is a specific and recognizable form. The method in which the towers go upwards from the public program, and are protecting the garden on the roof in its centre intended only for the residents, somewhat resembles a lotus flower. In addition, the building is a central design element and surrounded by greenery, just like the lotus as well. In the case of the facility the greenery is represented with unique city park. The appearance of the facility itself offers a suggestion for a name.

DISTINCTIVE SHAPE = LOTUS FLOWER = LOTUS TOWERS

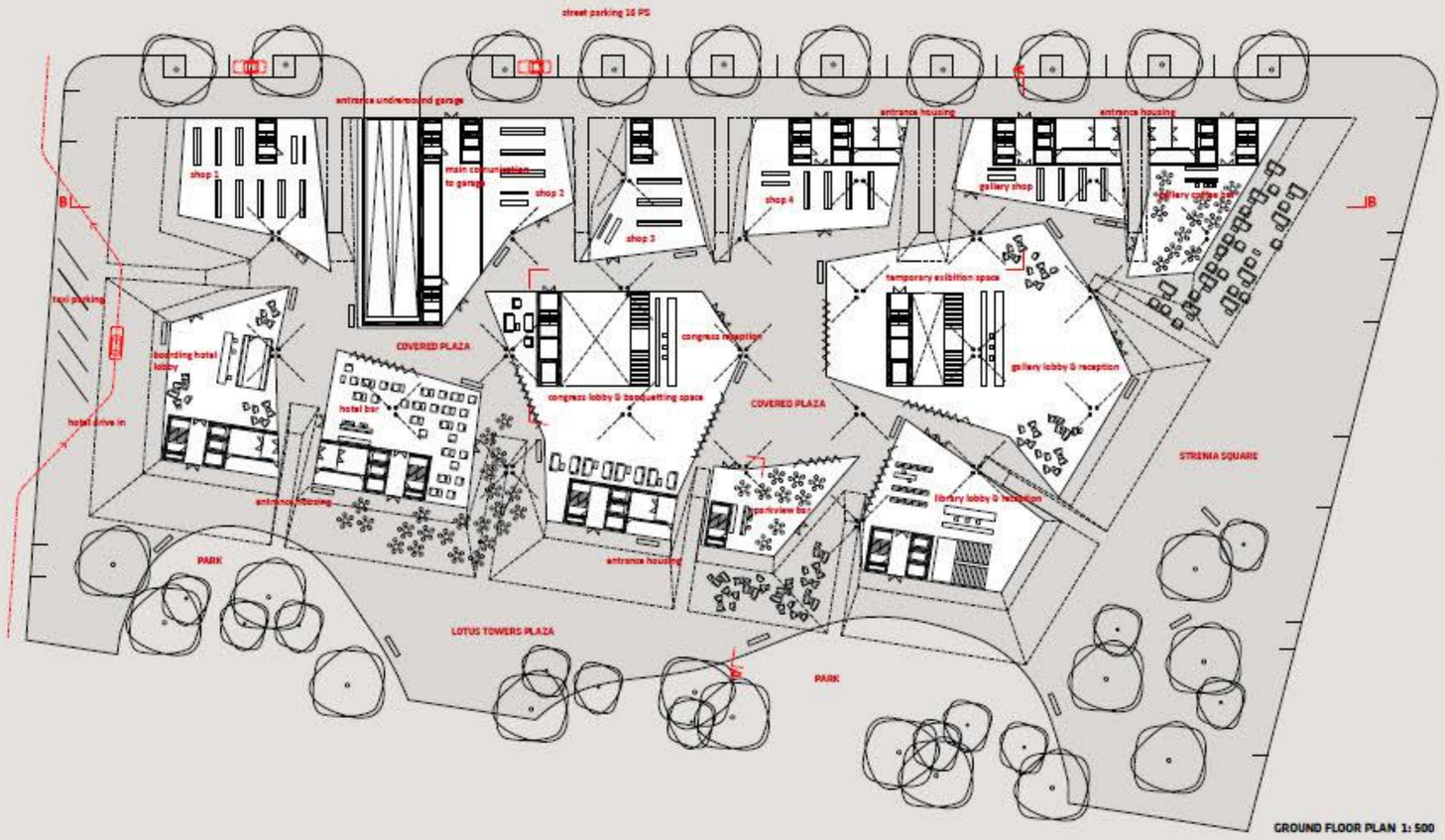
This type of search for an association in nature coincides with the character of the building and is a suitable lining for the market name of the facility. The additional suitability gives the name a widespread Buddhist doctrine about the lotus flower, which indicates life as a lotus flower, a symbol of purity and absolute beauty, rising from the unpleasant marsh environment and shining in all its beauty. This doctrine offers a new association, which can be easily translated into the facility as one of the first forerunners for the transformation of, until now, unregulated areas of Šmartinska partnership into a new modern city centre in which the new facility plays a central role.

LOTUS TOWERS

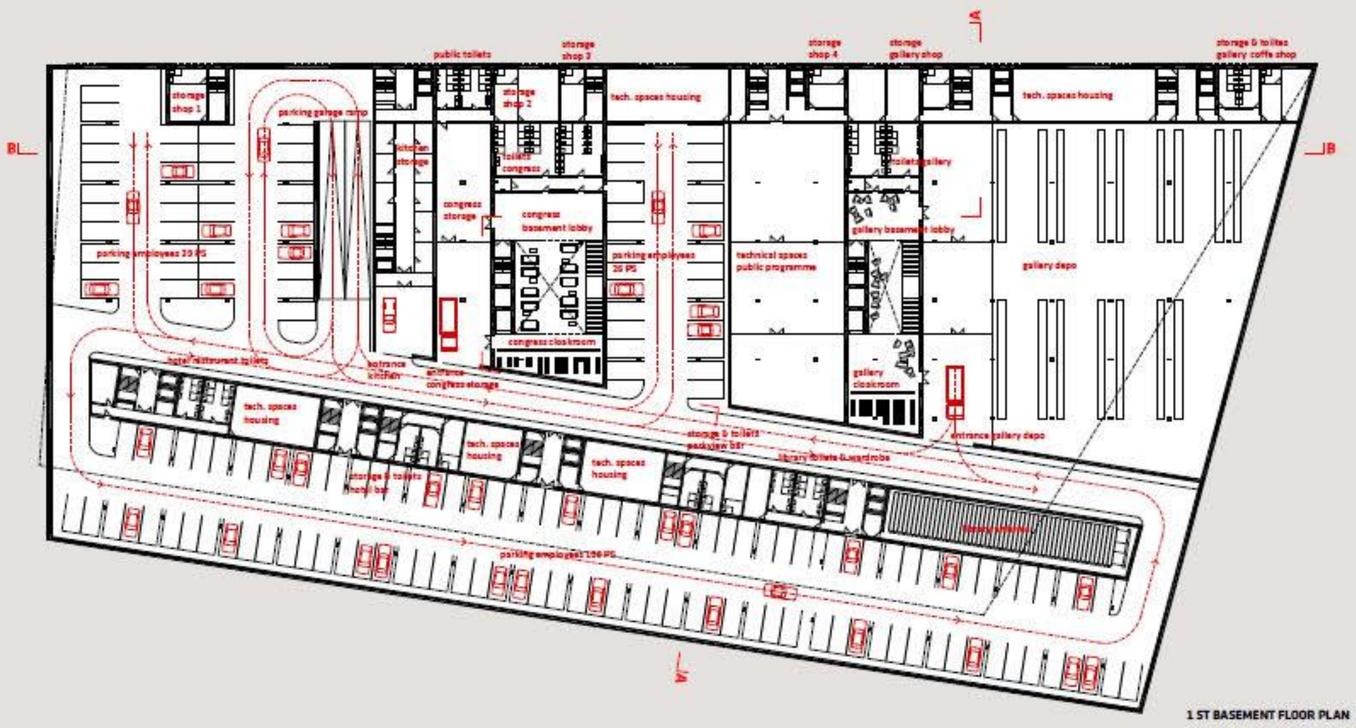
lifestyle with a view



1ST FLOOR PLAN 1:500



GROUND FLOOR PLAN 1: 500

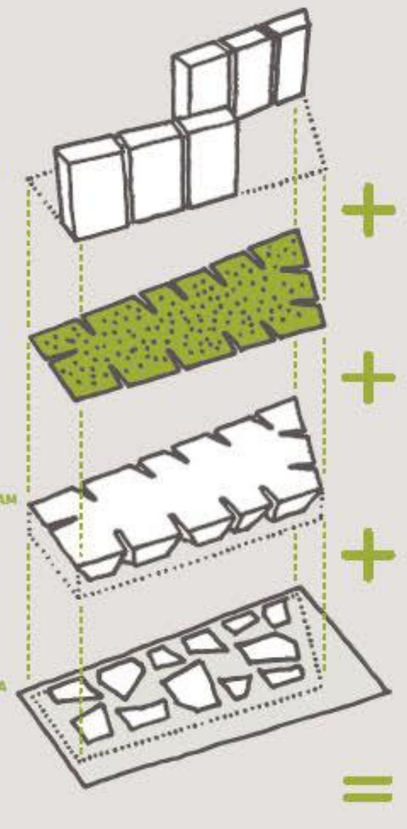


1 ST BASEMENT FLOOR PLAN 1: 500

2 ND BASEMENT FLOOR PLAN 1: 500

PROGRAM DISPOSITION

In terms of the program, the facility is divided into four elements. There is a covered plaza on the ground floor, which unites all the entrances into the programs and their accompanying market section and it becomes a new meeting place. The roof volume of the covered plaza consists of a public program that is distributed over three floors. An oasis for relaxation is located on the roof of the public program volume and at the foot of the apartment towers. There is a well maintained garden arrangement with a wellness centre intended for the residents, which can also be marketed to the public because of the assurance of high quality. At the top there are apartments, which have been arranged in six separated towers.

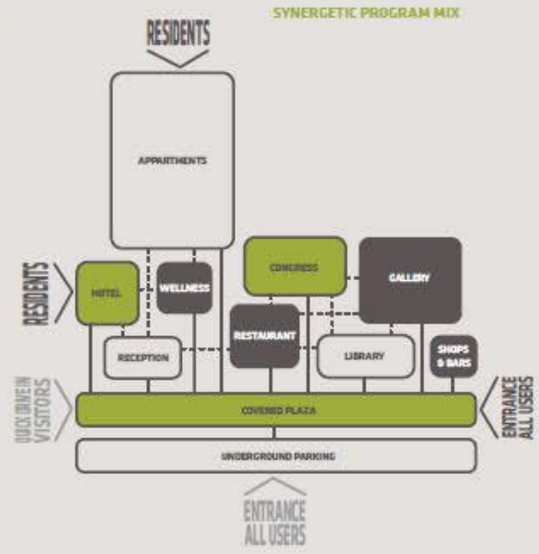


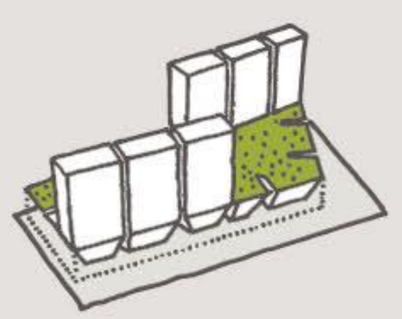
PUBLIC PROGRAM VOLUME

The characteristic of the part of the facility with the public program, is establishing an opportunity to mix the program and achieve synergy. For financial success and efficient programs anticipated in the scope of the facility, it is very important that they are always occupied and interesting for the market. Some programs have a lot of related or supplementary activities which have problems with financing if standing on their own. The design of the facility with a covered plaza, selection of programs, location of their position in the facility and setting up connections between them enables numerous synergetic effects. Supplementary activities such as congressional halls, reception, restaurant, wellness centre, and lobby bar, etc are used by several different programs and at the same time these programs are also opened for external users.

The program, which are not included in this project and are suggested as supplementary programs are boarding hotel and a congress centre. Boarding hotel is a program well known throughout the world since an increasing number of businessmen move to other cities for longer periods of time. At this moment, Ljubljana does not have such suitable offer, therefore location in the facility, in the proximity of the new business city centre is very suitable. Since high-class apartment units in the facility are already furnished with a reception and a concierge, the boarding hotel is the logical upgrade of the existing structure since also upper apartments can be rented to businessmen. The congress centre is also a logical supplementary activity. The gallery and the library could use classroom and presentation areas that and independently designed congress centre could provide. The unique location and adequate critical mass of activities of the new city centre are the assurance for good operation of this program.

SYNERGETIC PROGRAM MIX





DIFFERENT HEIGHTS OF PROGRAM ACCORDING TO NEEDS

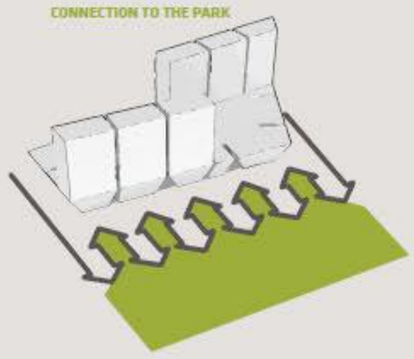
Parts of the public program volume have different floor heights according to the requirements of the program they contain. The basic height of the floor is 4.5 m and it includes four floors but this is reduced to three meters where the volume is located in the public program and that way an additional floor could be placed in the volume. A large congressional hall would spread over two floors high, same as the foyers of the majority of the public programs. The top floor of the gallery's exhibition space is also two floors high in some parts. The first basement contains all services and delivery area is higher. Other garage floors are lower.

DIFFERENT HEIGHTS OF PROGRAM ACCORDING TO NEEDS

COVERED PLAZA

The large openness of the ground floor of the public program and its connection with the park creates a new and important ambience. The area's point of interest further emphasises the selection of the facility program. Thus, the gallery, the library as well as the congress centre are programs with a high frequency of visits since they always offer users new content. An interesting program and direct proximity to the new city park, which gives the area a pleasant microclimate and attractiveness combined with a covered plaza, forms an accessory for a new space for encounters; a new town loggia.

CONNECTION TO THE PARK



NEW CITY LOGGIA

DOUBLE HEIGHT IN GALLERY SPACE

The gallery area needs special lighting, therefore, the central exhibition space of the gallery is placed on the top floor of the public program volume. The space gradually rises from one to two floors on the edge, which facilitates the positioning of overhead light in the top half of the facility's wall.

DOUBLE HEIGHT IN GALERY SPACE

LONG VIEWS AND NATURAL LIGHTING OF GALLERY CORIDORS

On hallways when building incisions comes to its closest daylight reaches corridors. The windows wich are here placed in lower position enables the visitors to take a long looks into the park and pause a little, between going from one exhibition space to another.

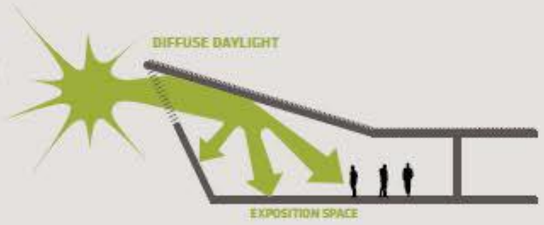
LONG VIEWS

NATURAL DAYLIGHT ENLIGHTENS ENTIRE COVERED PLAZA

Due to the system of incisions around the circumference of the public program volume, the daylight penetrates deep into the building and lights up the entire open part of the plaza. This gives the area a pleasant feeling and allows low energy consumption for lighting. The form of the incision originates directly from the law of light dispersion. At the top, the incisions are narrow towards the bottom are wider and allow the spread of light rays. The foyers of the public program are also illuminated with daylight. Light for these areas are provided by solar tubes. This type of system for introducing daylight into the area allows for the control over the amount of input, which is an expected necessity for this type of program.

DIFFUSE DAYLIGHT IN GALLERY EXPOSITION SPACES

By positioning the window upper part of the space, it captures a lot of daylight and through reflective surface of the ceiling, diffuse light spreads across the space. This kind of diffused lighting is the most suitable for the lighting of the exhibited items.



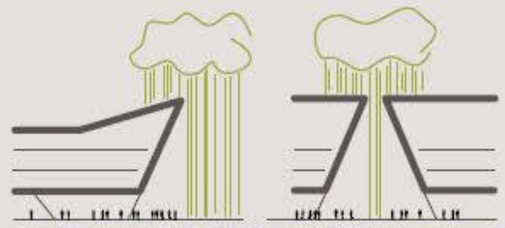
ROOF OASIS

Program is organized in green roof pavilions. The green oasis on the roof of the public program is designed as an area where the tenants can relax and be pampered. Since we want to provide a high quality service with marketing potential, it is party opened for external visitors (wellness). The pavilion on the roof include a swimming-pool, saunas, fitness, body care and resting areas. They are designed as a transparent, opened space with a green roof that partly exceeds the template of the program and forms large covered terraces.

NATURAL DAYLIGHT ENLIGHTENS ENTIRE COVERED PLAZA

INCLINED WALLS OF LOVER VOLUME ARE MAKING RAIN SHELTER

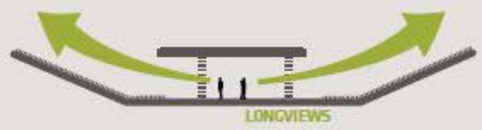
The inclined peripheral wall of the building and the inclined incisions for directing light to the ground floor, offers visitors protection from the rain and other precipitation and a covered link between all the facility programs. Due to the large width of the covered plaza, a mild atmospheric impact also extends into the interior in the same way as the daylight does through the incisions. This gives the plaza a sense of greater connectedness with the environment.



INCLINED WALLS OF LOWER VOLUME ARE MAKING RAIN SHELTER

LONG UNDISTURBED VIEWS THROUGH GREENERY

The whole terrace surface is covered with greenery, including the curved edges of the gallery area that direct the view towards the sky and form some kind of a safe hug from the roof garden and provide a feeling on intimacy for the users.



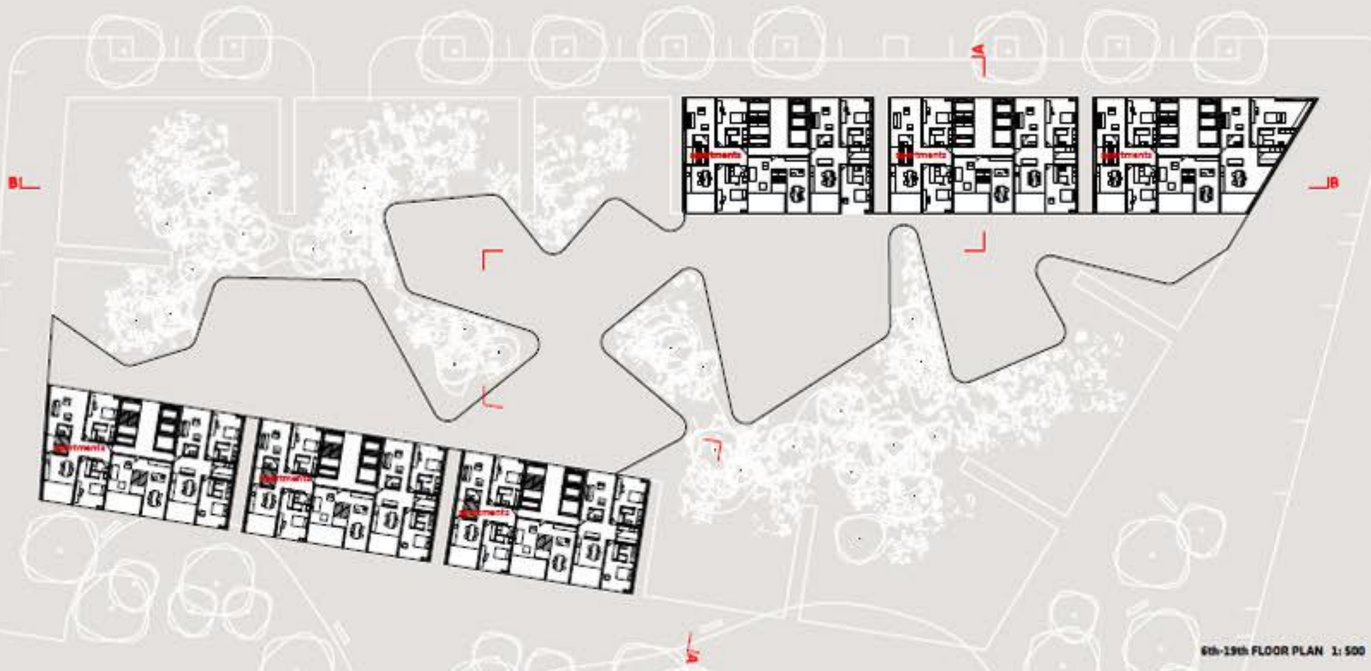
NATURAL VENTILATION OF COVERED PLAZA

Ventilation and openness of the covered plaza enables natural ventilation of the entry level. It should be mentioned that the ventilation level for the plaza and other areas of the public program is increased even further if some attention is paid to this phenomena during the planning of the planting of the bark in front of the facility and when determining the corridors for the increased air flow.

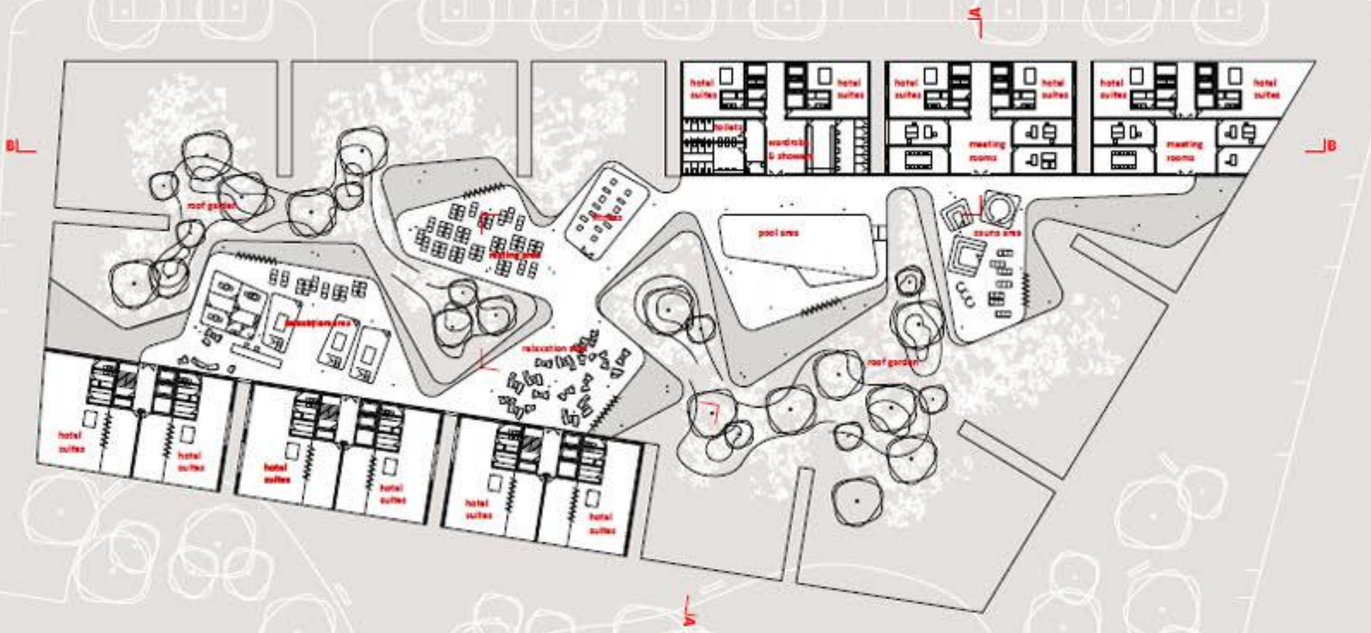
NATURAL VENTILATION

VIEWS TO SOUROUNDIGS ARE ENABLED THROUGH ENVELOPE CUTS

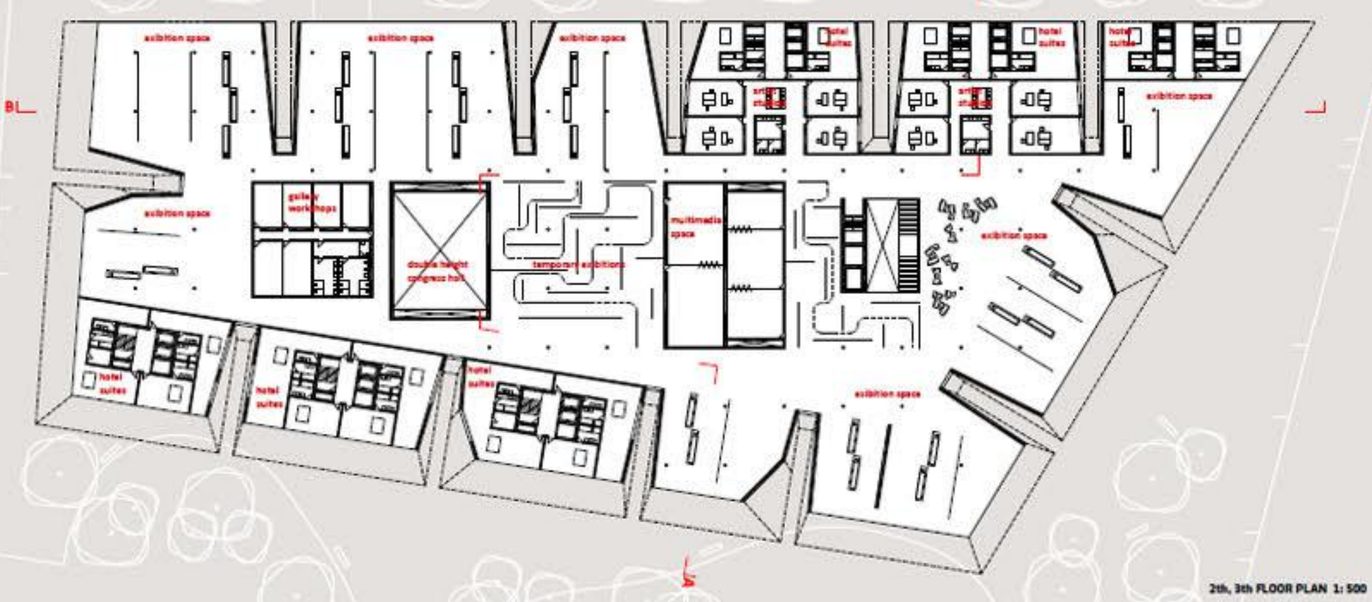
Even though the green oasis on the roof is formed in the shape of some kind of a bowl that gives a feeling of comfort and safety, the contact with the park and outside world is provided with the help of envelope cuts on the circumference of the building. The envelope cuts are leaning, giving the spectator an unlimited view into the distance or a direct view of the building's ground floor.



6th-19th FLOOR PLAN 1: 500



4th, 5th FLOOR PLAN 1: 500



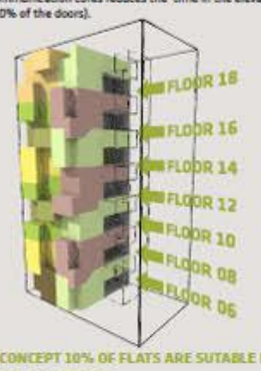
2th, 3th FLOOR PLAN 1: 500

APPARTMENTS

The importance of the location and the project assignment show a need for high-quality apartment planning. We added some additional elements to the parameters that we promised in the initial analysis for the designing of the apartments and their combination ensures an extremely pleasurable living. The view of the park is the main attraction, double orientation of the apartments allowing the view to all sides, cross natural ventilation as one of the most important parameters for providing sustainability. All living quarters are 4.5 m high and are extremely spacious, every apartment has a balcony overlooking the park and every bedroom has its own bathroom. The bathrooms are of different sizes, according to the size of the apartment and its importance.

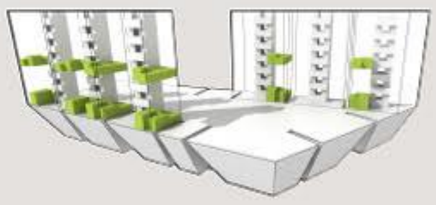
MULTILEVEL APARTMENTS REDUCES NUMBER OF MAIN COMMUNICATIONS LEVELS

All apartments are organized on multiple levels that allow cross-views and it enhances the feeling of the size of the space. In addition to other positive effects, this kind of design allows the placement of the apartment entrances and halls only on every second floor. This kind of organization of common communication cores reduces the time in the elevator and lower the costs of their production (50% of the doors).



DESPITE MULTILEVEL CONCEPT 10% OF FLATS ARE SUTABLE FOR PEOPLE WITH MOTOR FUNCTIONS DISABILITIES

Despite the multilevel concept of the apartment and different floor heights, 10% of the apartments are suitable for people with motor function disabilities according to the valid regulations. All public program in the lower floors can also be access by people with motor functions disabilities.

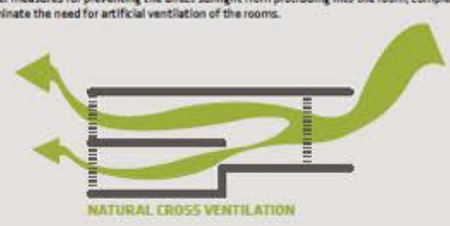


1,5 X FLOOR HEIGHT LIVING FOR BETTER NATURAL LIGHTNING

The big height of the living space provides greater living comfort and allows more natural lighting coming into the space. Due to the extreme height, the tenants do not notice the ceiling above them even when using the balcony in front of the living area and the balcony functions as an opened terrace orientated towards the park.

DOUBLE SIDE ORIENTATION FOR NATURAL CROSS VENTILATION

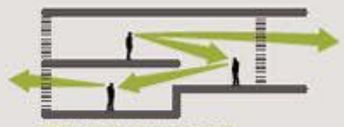
Double orientation of the apartments in combination with the permanent direction of the wind blowing through Ljubljana for the most of the year, is one of the most important factors for achieving living comfort and energy efficiency. Well ventilated rooms in combination with some other measures for preventing the direct sunlight from protruding into the room, completely eliminate the need for artificial ventilation of the rooms.



NATURAL CROSS VENTILATION

DIFFERENT LIVING LEVELS ENABLES CROSS VIEW COMUNICATION

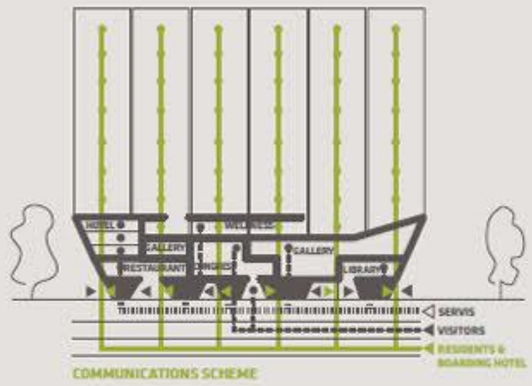
Multi-level design of the apartments enables communication between different areas and creates interesting views of the apartment. In combination with a double hight living space this increases the feeling of spaciousness and gives the apartment a feeling of uniqueness and it also creates a added market value to the apartment since this kind of space is usually limited to single family houses. It is also important that opened internal staircases, as a design element, expand the area visually, while virtually elliminating the area intended for horizontal communication (corridors) in the apartments.



CROSS VIEW COMUNICATION

COMMUNICATIONS SHEME

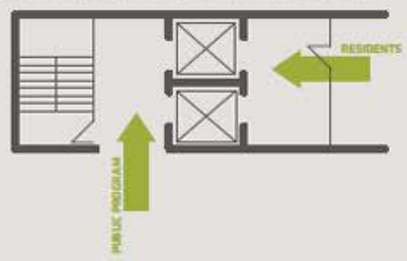
The communications scheme of the building is transparent and simple. All entrances for the walk-in access to the program are located on the covered plaza. This is also where all the entrance foyers are and part of the program intended for the general public which animated the whole plaza area even further. The building is linked by six basic (double) cores, three larger cores are intended for the main public programs of the building (congress centre, gallery, library) and the core for visitor access that came with their vehicles from the garage to the entry point at the plaza level. The three cores for the main public programs will also allow direct access to visitors from the lower floor. All cores are connected to the underground parking spaces, warehouses and service areas. The basement floors can be accessed from the central entry point for all vehicles and they divide into different sections underground. The first basement floor is somewhat higher and intended for deliveries and services, the second is intended for the visitors, followed by a garage intended for the tenants.



COMMUNICATIONS SCHEME

MIXED USE OF COMMUNICATION CORES

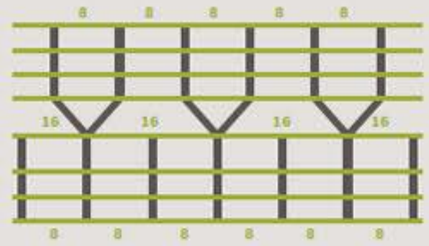
In order to maximize the space use, the cores linking the basement and the ground floor can be used by several types of users. All apartments in the building are organized above the fourth floor, which means that tenants only rarely use the stairs. They are mostly used for evacuation or for communication among the tenants living on higher floors. That is why all apartment entrances are organized in a way to allow direct access to elevators. The elevators on the ground floor can open both ways, since the users of the public program are using them from the other side. This public program is connected to the stairs as well, because of its lower locations. Simple electronic control allows us that the elevator doors open on the side of the apartments if they were called by the tenants or only on the side of the public program if they were called by the visitors. This kind of rationalizations saves a lot of spaces and elevator costs and at the same time it does not thaw the functionality and comfort for the users. The tenants can also use the stairs since they are electronically controlled in the upper floors as well.



STRUCTURAL DESIGN

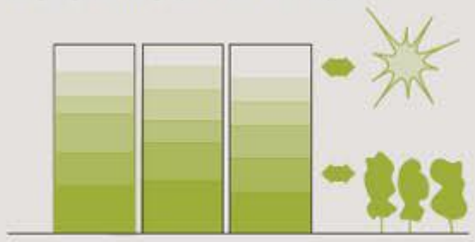
The construction system of the facility is clear and transparent. The communication centres are arranged around the circumference and inside in accordance with clear organization of underground floors with traffic solutions. Most of the facility is constructed of reinforced concrete, which is additionally utilized for temperature accumulation in the sense of good energy efficiency of the facility. Only the columns on the ground floor of the facility are made of steel. The load bearing columns are designed in such a way so that from the equal interval between concrete columns and the walls organized on an 8x8m mesh in the basement, they pass through the ground floor into 16x16m interval allowing for greater open spaces at the covered plaza level. Steel columns in the shape of a "V" pass under the first floor again on rigid mesh with a distance interval of 8x8m, which is offset by 4 metres from the original interval underground. Columns and walls follow a new interval from here on.

The area of the apartment buildings at the edges of both lots, have their own construction interval, which is independent of the interval of the public program and is unified through all the floors.



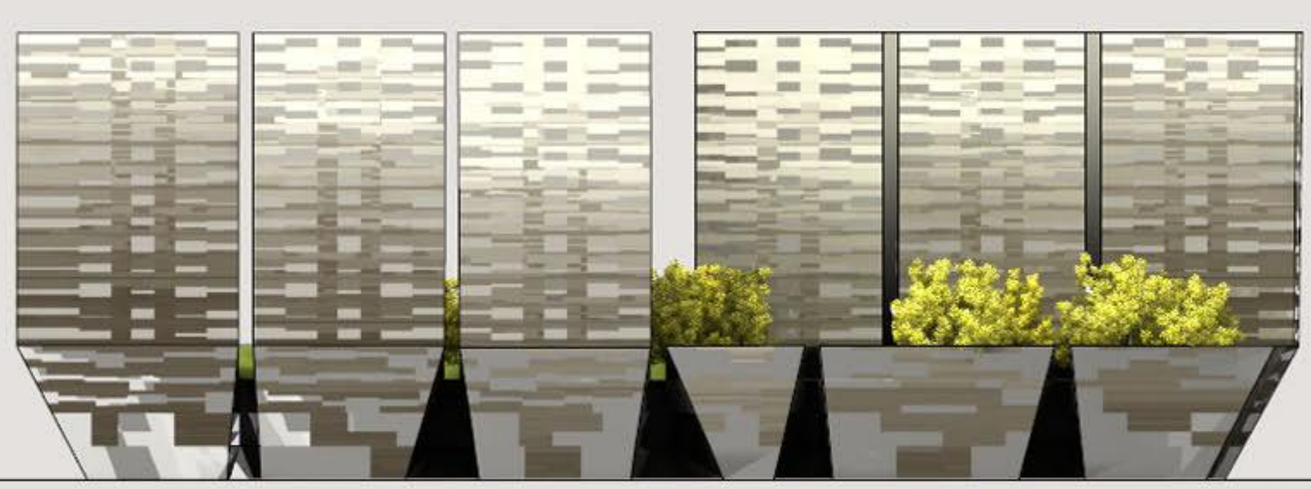
BUILDING CLADDING

Cladding used for the building is chosen in a way to emphasize the natural character of building location and use of sustainable systems used in its functioning. The building is covered with double skin ventilated facade made out of ecological composite laminated wooden panels. The panels are of different shades which blend from a darker colours at the ground floor where the building is communication with the park to ever lighter colours to the top of it where it is in contact with bright sky. The cladding of covered plaza ceiling on ground floor is made out of light colour natural wood as well to give this new city loggia a home like feeling.
In addition to above mentioned panels the facades are composed also of clear windows with good thermal insulation characteristics and system of shades used for preventing from overheating. When the building is going to be used, the shades will be randomly distributed over the surface of its elevations, which in combination with use of natural materials for cladding, will give the building very loose, warm and natural appearance.

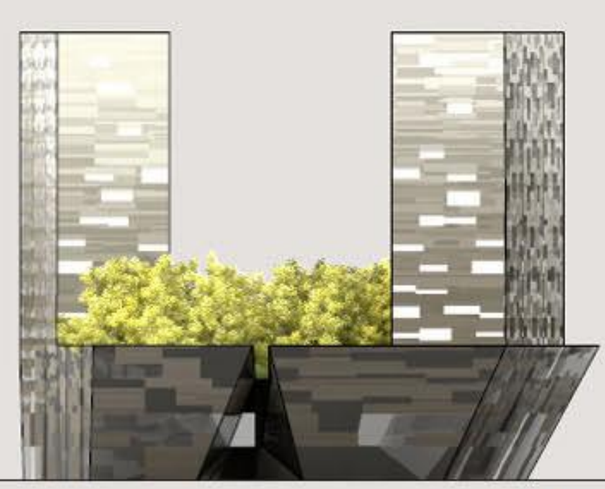


TRAFFIC SOLUTIONS

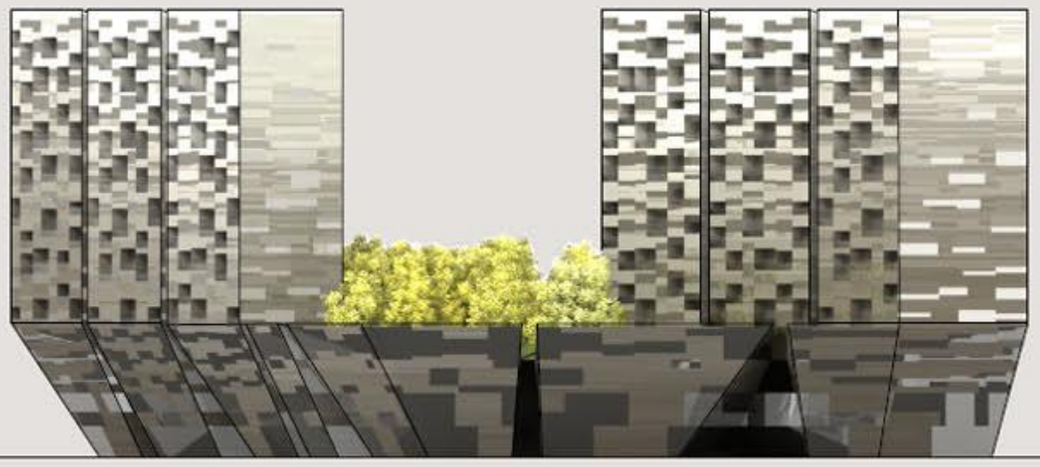
Traffic solutions are also very transparent. The area of the facility is completely organized as a kind of new town loggia and acts as a natural extension of the park, which is why the entire surface is intended for pedestrians and cyclists. Motorized vehicles are concentrated at the location's periphery. A common entrance into the underground parking garages is organized at the long side of the facility, which divides the inside of the facility into different program complexes. A drive-in for boarding hotel or all other organized visits is located on the shorter side, which borders the peripheral roads. Parking spaces for residents and visitors are organized in the underground floors and in accordance with the decrees of the urban act there are additional sideward parking spaces for visitors, which meet the needs required by regulations.



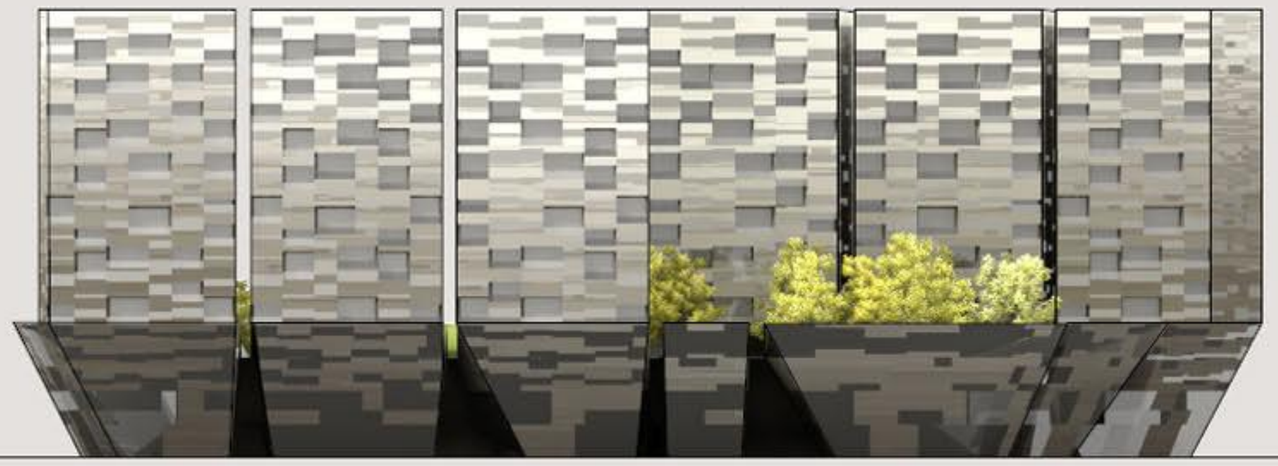
EAST ELEVATION 1: 500



SOUTH ELEVATION 1: 500



NORTH ELEVATION 1: 500



WEST ELEVATION 1: 500

GROUND FLOOR PLAN 1:200

SUSTAINABLE CONCEPT

The proposed design was based on the following GREEN / SUSTAINABILITY principles:

1. Introduction of an "Efficient Architecture" concept to achieve aesthetics, functionality and efficiency as integrated design product
2. Improve Indoor Air Quality above standard levels
3. Use Renewable Energies
4. Introduce efficient building technologies
5. Minimize negative environmental impact during the construction and life cycle running phases
6. Use integrated design approach to arrive to the above goals
7. Optimize all aspects of the design with dynamic building simulation tools
8. Tender document should assure the adherence to the sustain able design intent

DESIGN OPTIMIZATION

The Design Optimization process is based on a systematic approach that follows the procedure of an Integrated design system:
The first step is to optimize urban and architectural solutions to achieve the reduction of heating and cooling loads and secure high internal comfort level
The aim is to design complex and building that best respond to the local climatic conditions in combination with the schedule of use. This is achieved by manipulation with the building massing, shape, orientation, shading, envelope characteristics, glazing, ratio between openings and communications, thermal masses and greenery.

Once building loads have been reduced to minimum the optimization of building systems efficiency takes place.
First step is to select systems that are most effective for the given architectural and structural solution. Further step is to select system components with the best heat transfer characteristic. System infrastructure is designed to achieve minimal energy consumption based only on the Demand control. The capital equipment is selected through the criteria of highest level of efficiency and proven reliability. The terminal system is designed to secure that the capital equipment works longest in its most efficient mode, thus reduce the energy consumption of capital consumers.

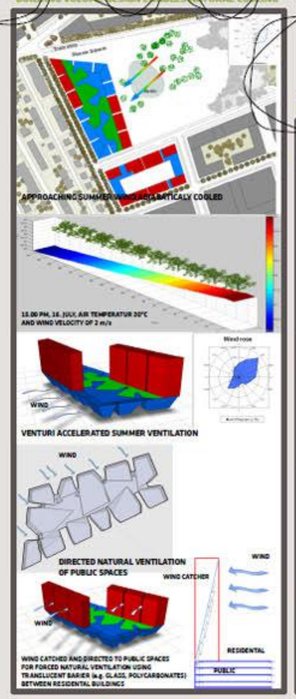
At the same time the design considers the use of locally available renewable resources, to reduce the use of "dirty" primary energies
The extensive analysis of the local renewable resources has been performed. The results can be summarized as follows:
The availability of sun energy for the heating and electricity production has been investigated. For economic reasons the utilisation of PV electricity production has not been envisaged at this stage. On the other hand the significant percentage of sanitary water – 46% - shall be heated by the sun energy.
The wind energy in Ljubljana does not amount to the usable energy source as it is characterized by the low intensity.
The ground-water is available under the site, in significant quantities. This water shall be utilized for cooling and heating purposes.

At the end of the design process the building behaviour in real time conditions is converted in control running protocols.
The aim is to achieve the most rational interaction between building characteristics, climatic conditions and use schedules, as running protocols would be based on real building behavioural characteristics.
The tender document shall make sure that the design intents are achieved during the constrktion and exploitation of the complex. Targeted LEED credits shall be in detail, incorporated in the tender documentation.

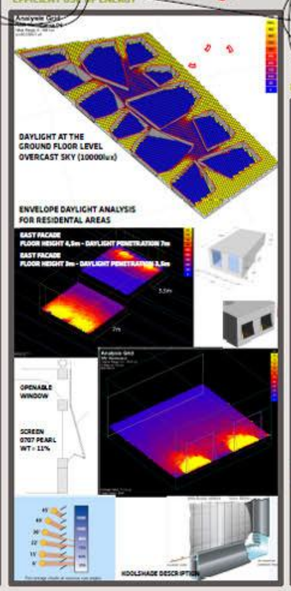
The final result shall be the "Green" Development that achieves:

BEST COMFORT CONDITIONS
ENERGY EFFICIENCY
MINIMAL NEGATIVE ENVIRONMENTAL IMPACT

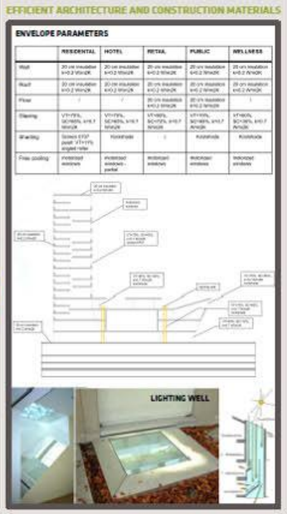
BUILDING VOLUME DESIGN ENABLES NATURAL COOLING



EXCELLENT DAYLIGHTING AND SHADING SYSTEMS FOR EFFICIENT USE OF ENERGY

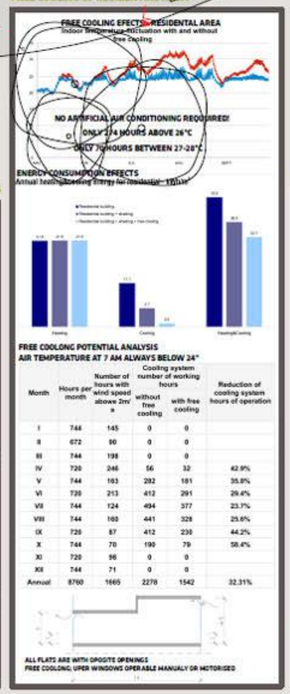


EFFICIENT ARCHITECTURE AND CONSTRUCTION MATERIALS



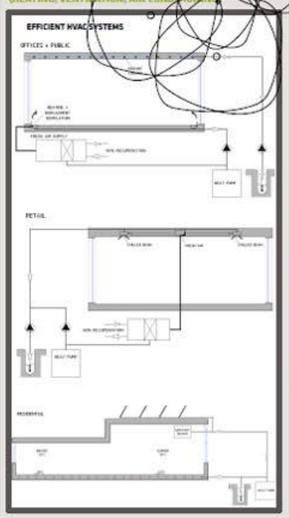
	RESIDENTIAL	HOTEL	RETAIL	PUBLIC	WELLNESS
Wall	20 cm insulation k=0,2 W/m2K	20 cm insulation k=0,2 W/m2K	20 cm insulation k=0,2 W/m2K	20 cm insulation k=0,2 W/m2K	20 cm insulation k=0,2 W/m2K
Roof	20 cm insulation k=0,2 W/m2K	20 cm insulation k=0,2 W/m2K	20 cm insulation k=0,2 W/m2K	20 cm insulation k=0,2 W/m2K	20 cm insulation k=0,2 W/m2K
Floor			20 cm insulation k=0,2 W/m2K	20 cm insulation k=0,2 W/m2K	20 cm insulation k=0,2 W/m2K
Glazing	U1=1W/m2, SC=96%, k=0,7 W/m2K	U1=1W/m2, SC=96%, k=0,7 W/m2K	U1=1W/m2, SC=96%, k=0,7 W/m2K	U1=1W/m2, SC=96%, k=0,7 W/m2K	U1=1W/m2, SC=96%, k=0,7 W/m2K
Shading	Screen 0707 pearl U1=1W/m2, angled roller	Kolshade	1	Kolshade	Kolshade
Free cooling	Protected windows - partial	Protected windows	Protected windows	Protected windows	Protected windows

FREE COOLING OF RESIDENTIAL AREAS

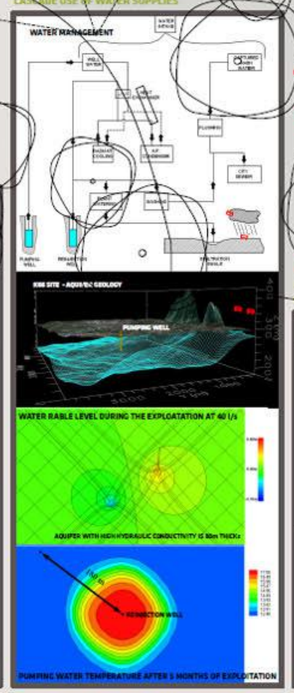


Month	Hours per month	Number of hours with wind speed above 2m/s	Cooling system number of working hours without free cooling	with free cooling	Reduction of cooling system hours of operation
I	744	145	0	0	
II	672	90	0	0	
III	744	198	0	0	
IV	720	246	56	32	42.9%
V	744	163	282	181	35.8%
VI	720	213	412	291	29.4%
VII	744	124	494	377	23.7%
VIII	744	160	441	328	25.6%
IX	720	87	412	230	44.2%
X	744	70	190	79	58.4%
XI	720	98	0	0	
XII	744	71	0	0	
Annual	8760	1665	2278	1542	32.31%

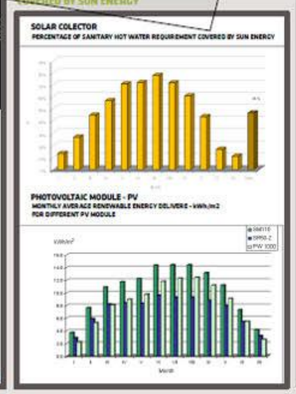
EFFICIENT HVAC SYSTEMS (HEATING, VENTILATION, AIR CONDITIONING)



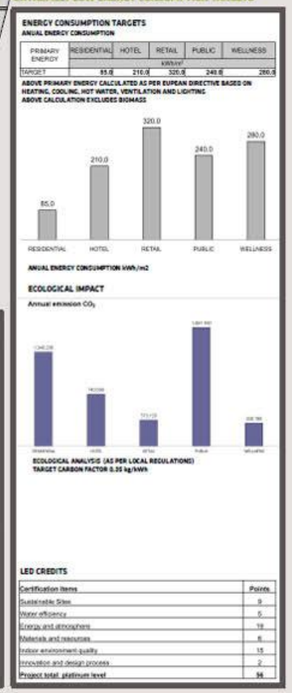
WATER MANAGEMENT SYSTEM WITH CASCADE USE OF WATER SUPPLIES



SANITARY HOT WATER REQUIREMENT COVERED BY SUN ENERGY



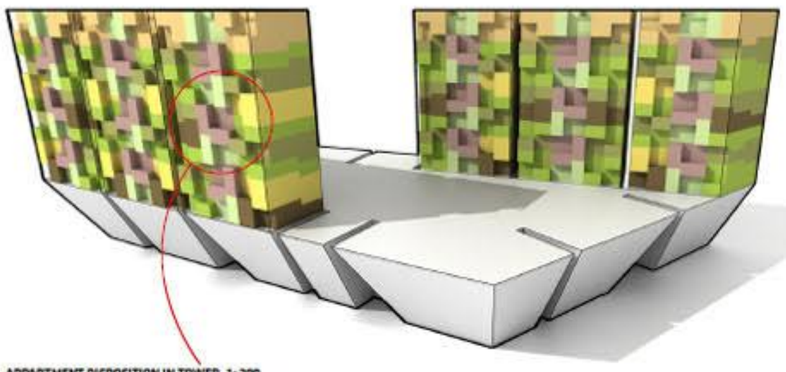
EXTREMELY LOW ENERGY CONSUMPTION TARGETS



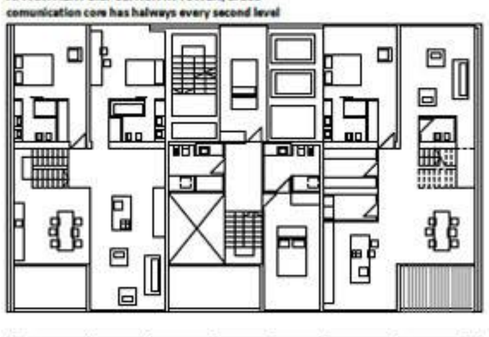
PRIMARY ENERGY	RESIDENTIAL	HOTEL	RETAIL	PUBLIC	WELLNESS
	kWh/m2				
TARGET	85.0	210.0	320.0	240.0	280.0

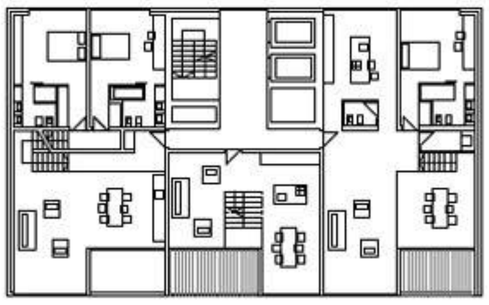
LED CREDITS

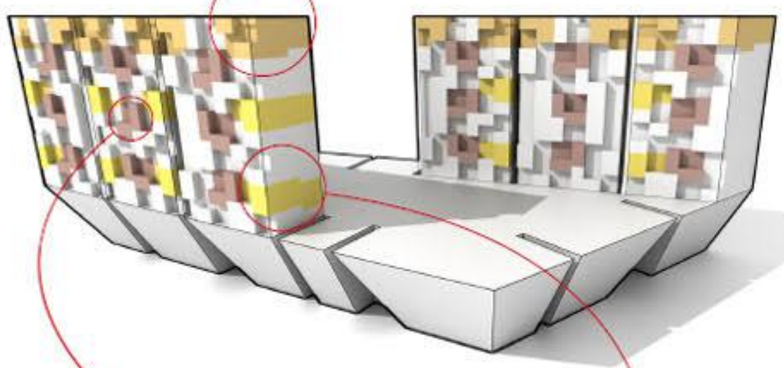
Certification items	Points
Sustainable Sites	9
Water efficiency	5
Energy and atmosphere	18
Materials and resources	6
Indoor environment quality	15
Innovation and design process	2
Project total platinum level	56

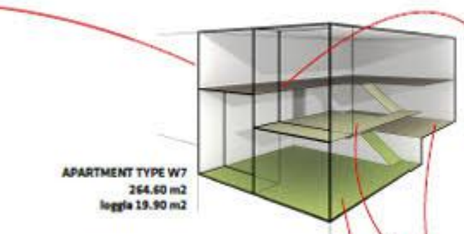


APPARTMENT DISPOSITION IN TOWER, 1: 200
comunication core has halways every second level



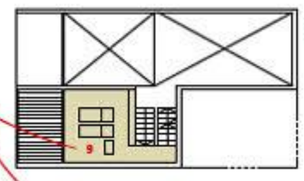




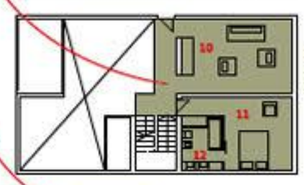


APARTMENT TYPE W7
264.60 m2
loggia 19.90 m2

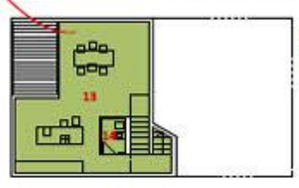
	LEVEL +3.0m	**84.00 m2**
1	living	6.85 m2
2	utility	6.40 m2
3	bedroom	18.40 m2
4	bathroom	4.95 m2
5	bedroom	18.40 m2
6	bathroom	5.55 m2
7	bedroom	17.90 m2
8	bathroom	5.55 m2



	LEVEL +1.5m	20.60 m2
9	library	20.60 m2
	loggia	9.95 m2



	LEVEL 0.0m	**66.50 m2**
	(entrance)	
10	living	43.05 m2
11	bedroom	17.90 m2
12	bathroom	5.55 m2

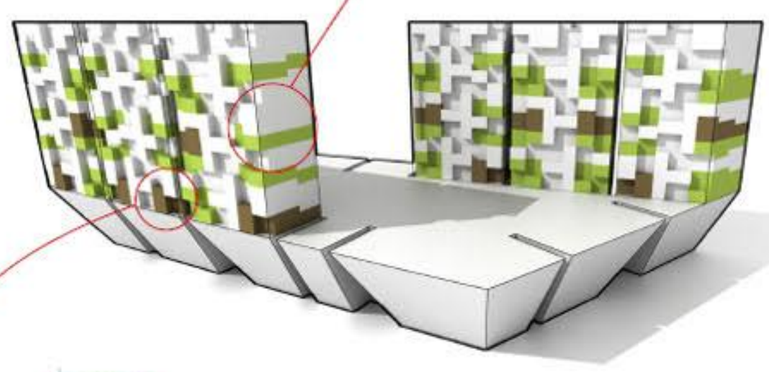


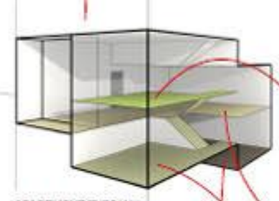
	LEVEL -1.5m	**46.75 m2**
13	living	44.40 m2
14	toilet	2.35 m2
	loggia	9.95 m2

APARTMENT TYPE W1
133.25 m2
loggia 11.65 m2

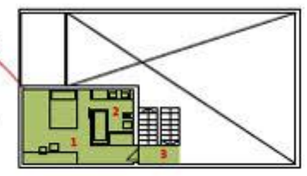
	LEVEL 0.0m	**103.85 m2**
	(entrance)	
1	living	48.30 m2
2	toilet	2.35 m2
3	bedroom	18.40 m2
4	bathroom	4.95 m2
5	bedroom	17.90 m2
6	bathroom	5.55 m2
7	utility	6.40 m2
	loggia	6.0 m2

APARTMENT TYPE W3
103.85 m2
loggia 9.95 m2

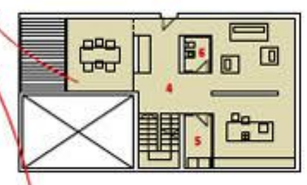




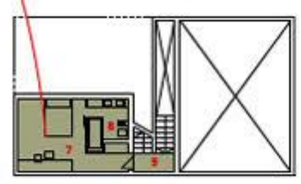
APARTMENT TYPE W6
184.55 m2
loggia 9.95 m2



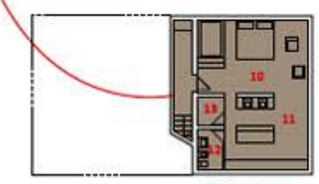
	LEVEL +1.5m	**27.45 m2**
1	bedroom	17.90 m2
2	bathroom	5.55 m2
3	living	4.00m2



	LEVEL 0.0m	**77.00 m2**
	(entrance)	
4	living	70.60 m2
5	utility	4.05 m2
6	toilet	2.35 m2
	loggia	9.95 m2

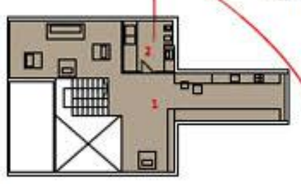


	LEVEL -1.5m	**27.65 m2**
7	bedroom	17.90 m2
8	bathroom	5.55 m2
9	toilet and utility	4.20 m2

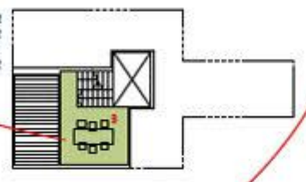


	LEVEL -3.0m	**52.45 m2**
10	bedroom	23.60 m2
11	wardrobe	18.40 m2
12	toilet	3.00 m2
13	shower	2.25 m2

	LEVEL +3.0m	**61.35 m2**
1	living	53.85 m2
2	toilet and utility	7.50 m2

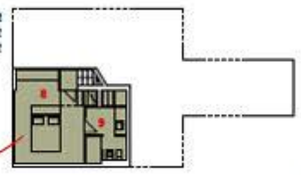


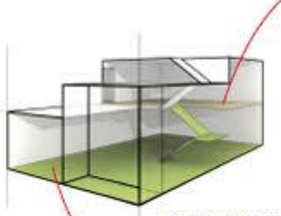
	LEVEL +1.5m	**14.90 m2**
3	living	14.90 m2
	loggia	11.65 m2



	LEVEL 0.0m	**31.60 m2**
	(entrance)	
4	living	9.10 m2
5	bedroom	14.60 m2
6	bathroom	4.15 m2
7	wardrobe	3.75 m2

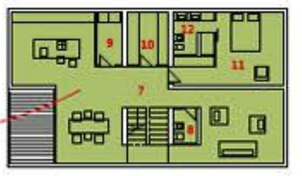
	LEVEL -1.5m	**48.00 m2**
8	bedroom	18.05 m2
9	bathroom	7.35 m2



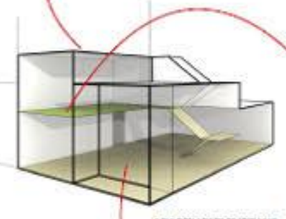


APARTMENT TYPE W4
158.90 m2
loggia 9.95 m2

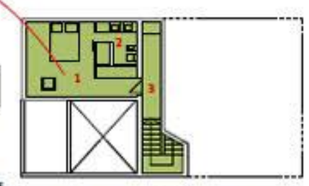
	LEVEL 0.0m	58.10 m2
	(entrance)	
1	living	11.40 m2
2	wardrobe	3.00 m2
3	bedroom	18.40 m2
4	bathroom	1.85 m2
5	bedroom	17.90 m2
6	bathroom	5.55 m2



	LEVEL -3.0m	100.80 m2
7	living	64.65 m2
8	toilet	2.35 m2
9	utility	4.05 m2
10	wardrobe	6.40 m2
11	bedroom	18.40 m2
12	bathroom	4.95 m2
	loggia	9.95 m2



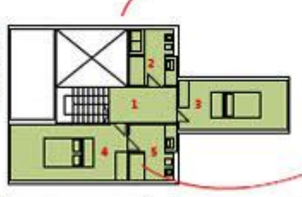
APARTMENT TYPE W5
135.10 m2
loggia 9.95 m2



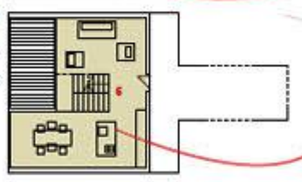
	LEVEL +3.0m	**35.35 m2**
1	bedroom	8.00 m2
2	bathroom	13.20 m2
3	living	7.60 m2

	LEVEL 0.0m	**99.75 m2**
	(entrance)	
4	living	50.70 m2
5	bedroom	18.40 m2
6	bathroom	1.85 m2
7	bedroom	17.90 m2
8	bathroom	5.55 m2
9	toilet	2.35 m2
10	utility	3.00 m2
	loggia	9.95 m2

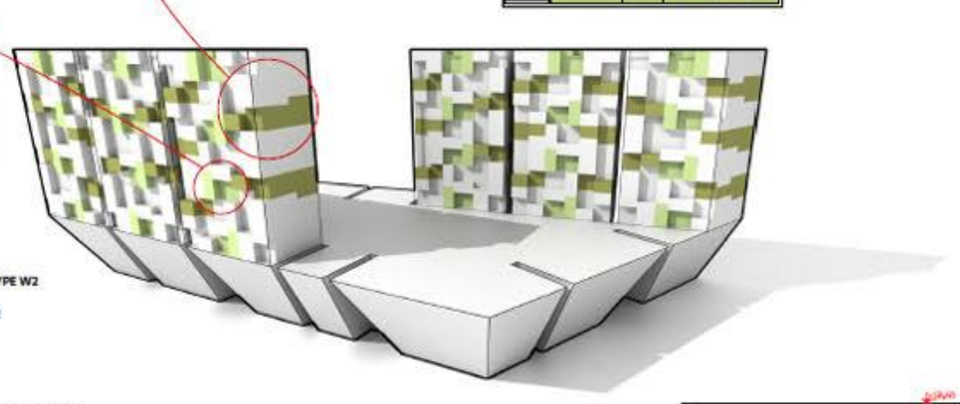
	LEVEL +3.0m	**56.10 m2**
1	living	8.00 m2
2	bedroom	15.20 m2
3	bathroom	7.35 m2
4	bedroom	18.90 m2
5	bathroom	7.35 m2

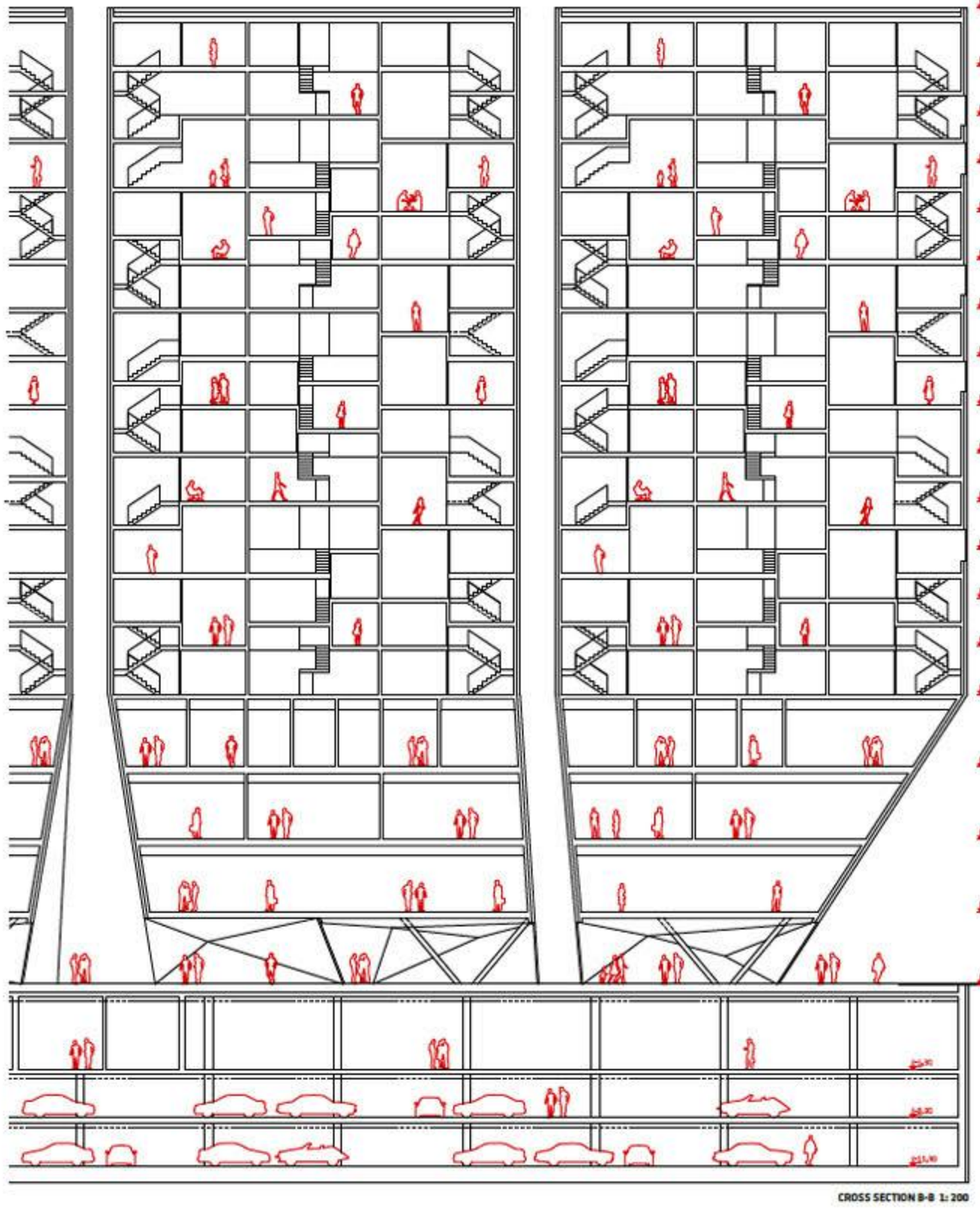


	LEVEL 0.0m	**48.00 m2**
	(entrance)	
6	living	8.00 m2
	loggia	12.20 m2

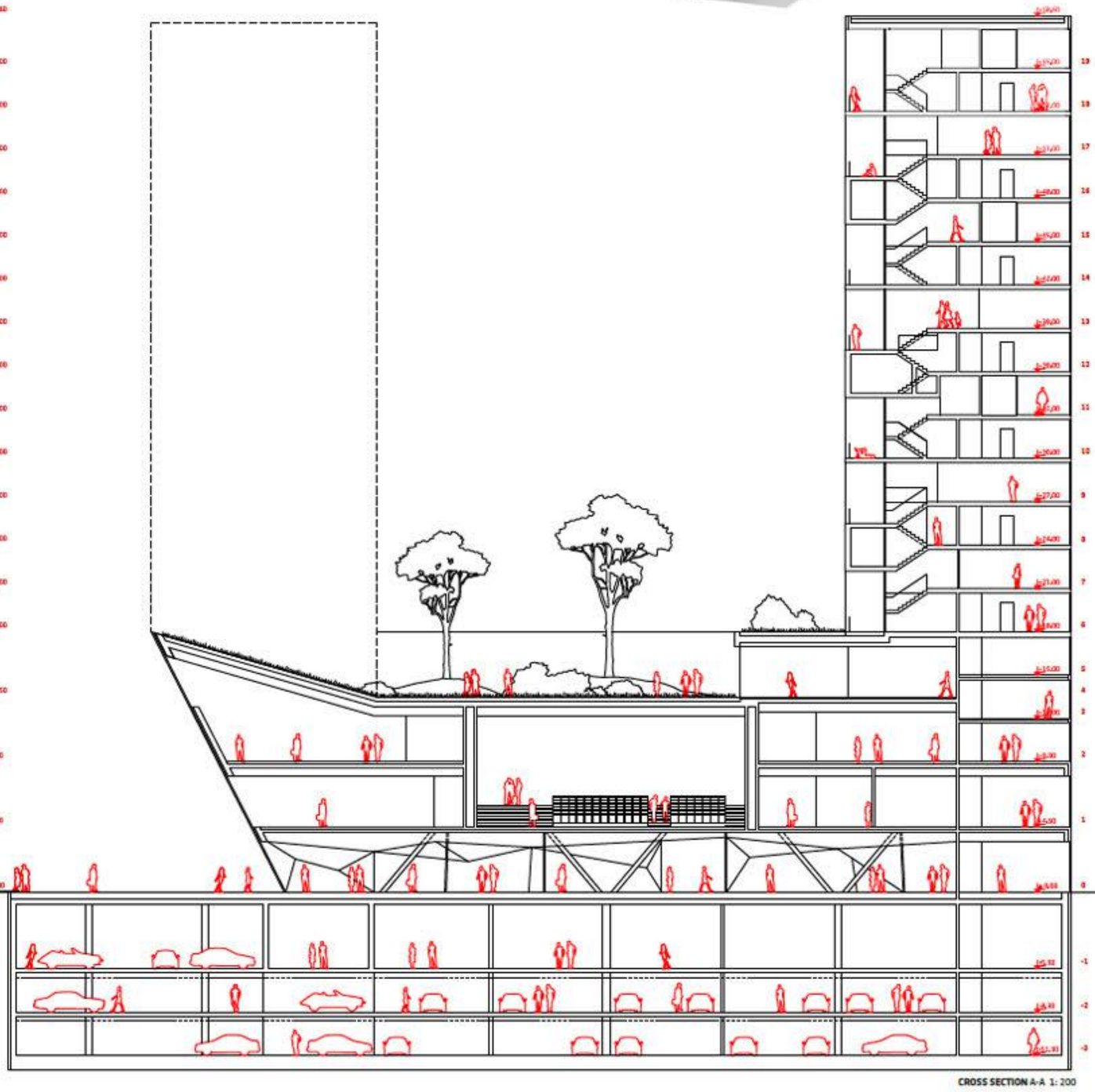


APARTMENT TYPE W2
104.10 m2
loggia 12.20 m2





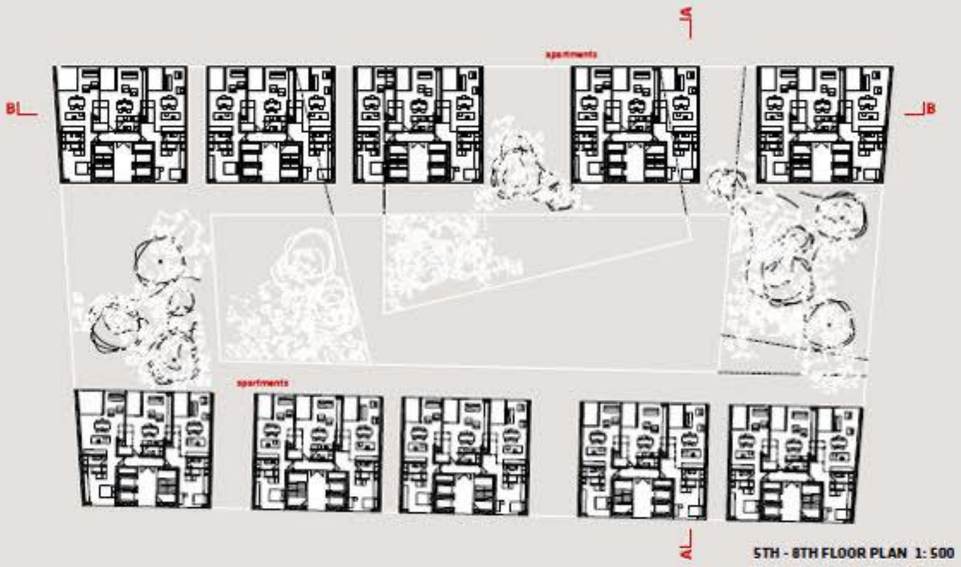
CROSS SECTION B-B 1: 200



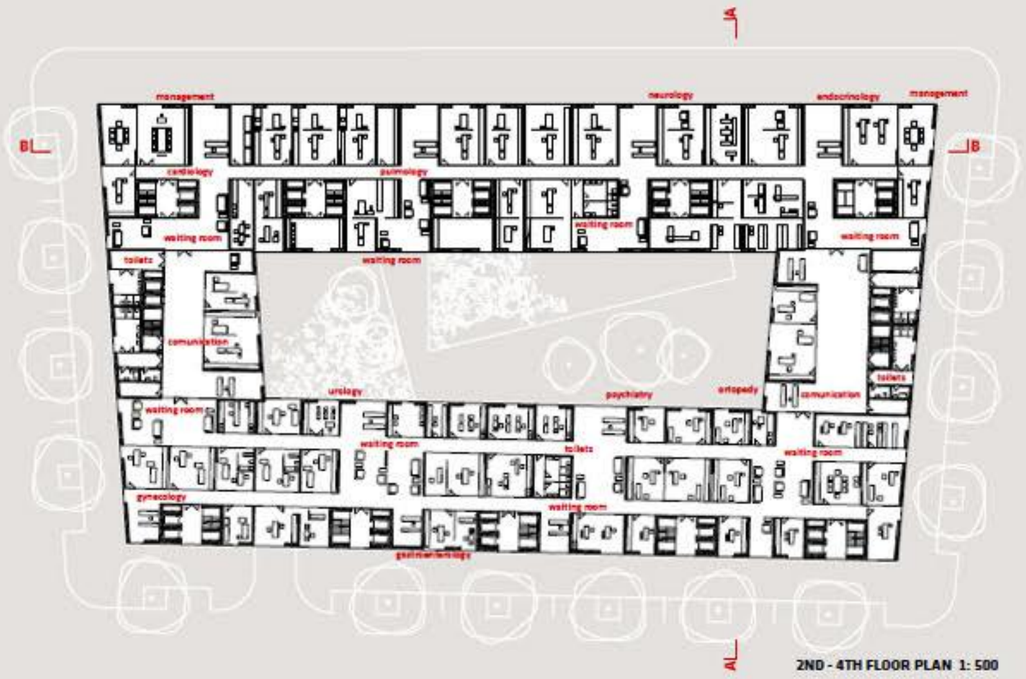
CROSS SECTION A-A 1: 200

LOTUS TOWERS

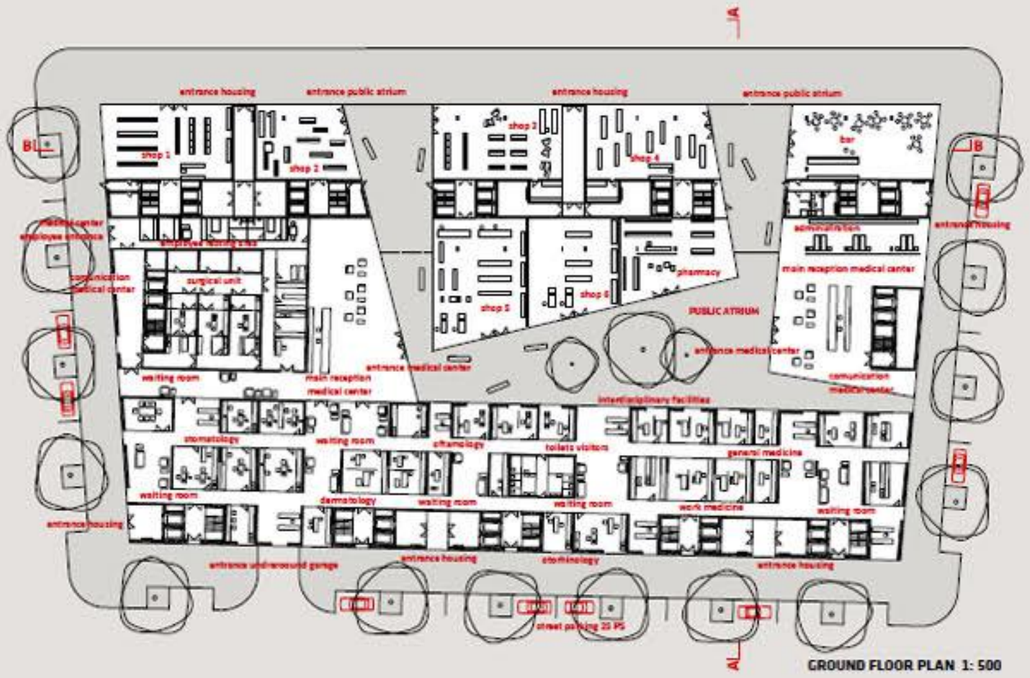
lifestyle with a view



5TH - 8TH FLOOR PLAN 1: 500

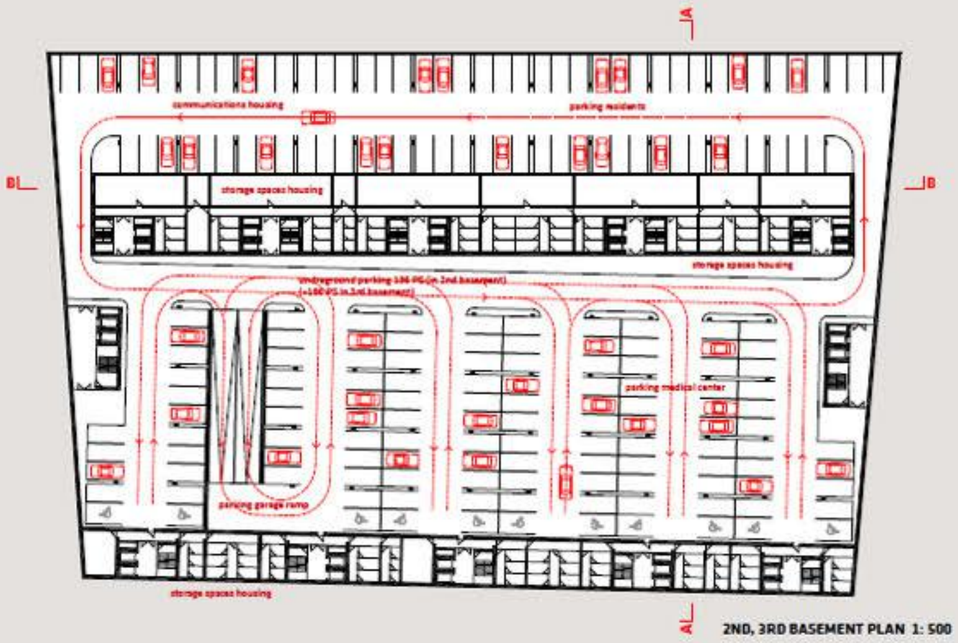


2ND - 4TH FLOOR PLAN 1: 500



GROUND FLOOR PLAN 1: 500

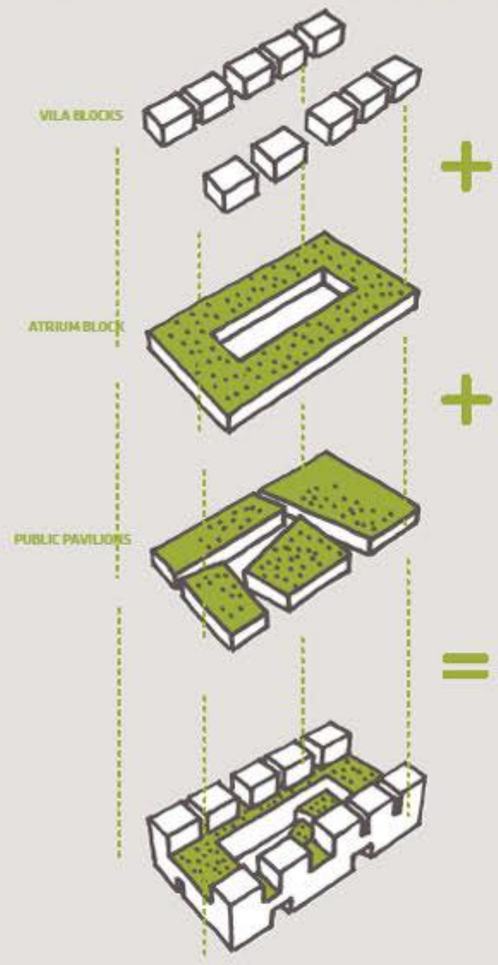
1ST BASEMENT PLAN 1: 500



2ND, 3RD BASEMENT PLAN 1: 500

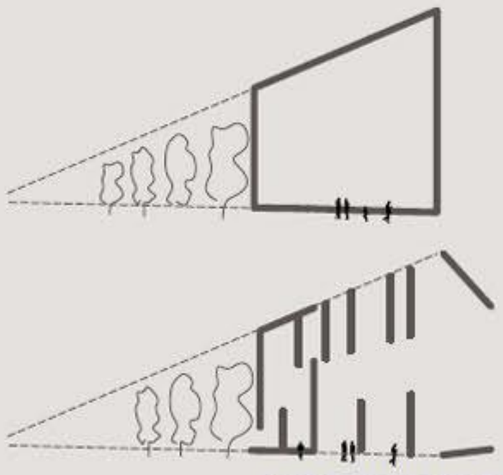
PROGRAM DISPOSITION

The design of the building line along the park, which is defined by the urban act being adopted, anticipates an atrium (care) typology, which creates some kind of wall on the parking side, defining the park area. The maximum floors for the building P+8 is also given on the park side. For the design of the first atriums, which will form the new edge of the park, we shall submit a typological sample of the construction, which can serve as a basis for further deliberation about the park line. The solution preserves the definition of the edge of the park and the long line of construction adds a human scale.
Regarding the program, the facility is divided into three complexes. A public program is organized as a pavilion on the lower two floors, which allows transitions from the park to the interior of the squares. On top of it is located full atrium block (care) with a public or apartment building program located there. The selection of the program depends on the respective project task for each plot. In our case, the majority of squares are business ones since there is a medical centre included. At the top of the apartment building there are some kind of villa blocks, which are arranged along both long sides of the square.



GIVING HUMAN SCALE TO LONG BUILDING LINE

Under the urban act the anticipated unified line of buildings along the road is exceptionally long (800m) which is a very intimidating scale for the pedestrian, which is not responsible for the character of the area. With a few incisions in this "long wall" a rhythm in the facade is established, which stops the view so that it does not escape into infinity and create the impression of a much smaller structure at the same time keeping a clearly defined edge of the park.



GIVING HUMAN SCALE TO LONG BUILDING LINE

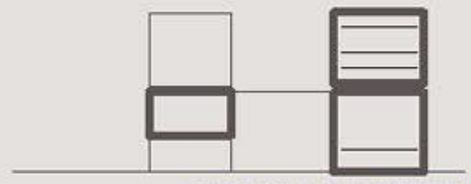
NATURAL VENTILATION OF INNER ATRIUM

Gaps also have a functional reason since we lead the wind through them from the park into the inner atrium and we also enable natural ventilation throughout the entire building. Like through the gapes between the villa blocks, the wind comes into the inner atrium area also between the pavilions of the public program. The ground floor of the atrium at the opposite side of the park is closed so that the wind is directed to the upper floors.

NATURAL VENTILATION OF INNER ATRIUM

SENCE OF PARK FOR ALL APARTMENTS

Apartments organized in the villa blocks above the full atrium block level are arranged along both longer sides. The gapes between each tower also enable a second line of towers to keep connected to the park setting to some extent. The favourable impact of the microclimate passes through the diluted construction along the park into the inner atrium. In addition, oriented views into the distance open up through the empty spaces between the buildings.



SENSE OF PARK FOR ALL APPARTMENTS

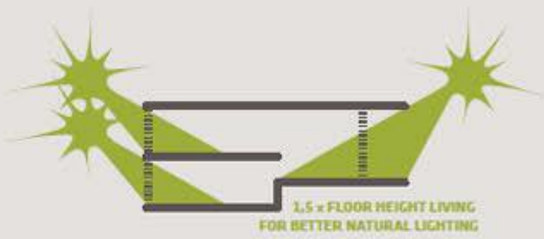
DOUBLE SIDED ORIENTATION OF APPARTMENTS FOR NATURAL CROSS VENTILATION

All the apartments in the southern part have a double sided orientation just as in the western part. The double sided orientation of the apartments in combination with the constant direction of the wind that blows in Ljubljana throughout most of the year and for this location favourable is one on the most important factors for achieving living comfort and energy efficiency. Well ventilated rooms in combination with some other measures to prevent the direct penetration of the sun, completely eliminate the need for additional air conditioning units. The double sided orientation of the apartments allow for views of the park as well as the inner atrium.

NATURAL CROSS VENTILATION

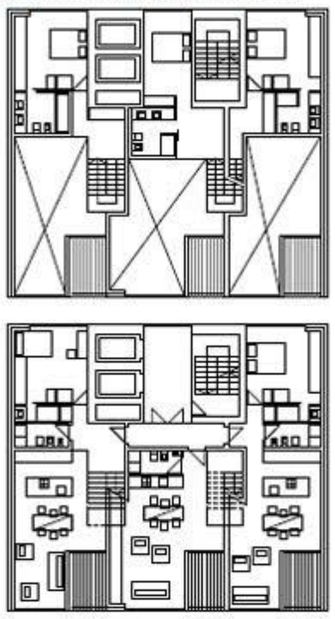
1.5 X FLOOR HEIGHT IN APARTMENTS LIVING FOR BETTER NATURAL LIGHTNING

The approach to the organization of the volumes of each apartment is the same as the one in the apartments of the western part. The apartments in accordance with the project task are somewhat smaller but have retained all the essential elements, which raise the quality level of the living space. All the living spaces have a floor height of 4.5 metres, each apartment has a large loggia oriented in the direction of the park and each bedroom also has its own bathroom. The high ceilings of the living space allow for a deeper penetration of sunlight into the room. Due to the great height as well as the use of the loggia in front of the living space, we no longer perceive the ceiling above us and the loggia functions as an open terrace oriented towards the park.

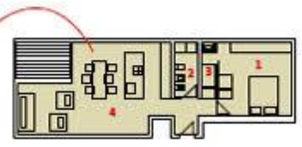


1,5 x FLOOR HEIGHT LIVING
FOR BETTER NATURAL LIGHTING

MULTILEVEL APPARTMENTS, every 2nd floor, 1: 200

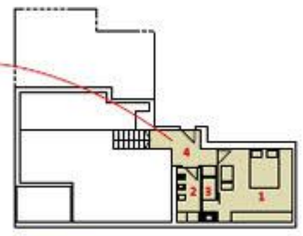


APARTMENT TYPE S3
59.75 m2
loggia 6.05 m2

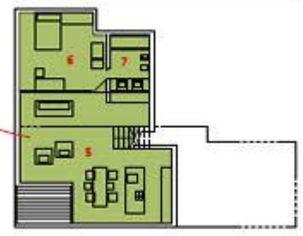


LEVEL 0.0m (entrance)	**59.75 m2**
1 bedroom	16.00 m2
2 bathroom	1.90 m2
3 toilet and utility	3.90 m2
4 living	37.90 m2
loggia	6.05 m2

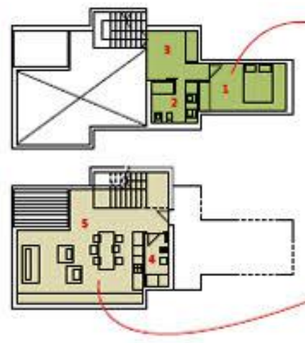
APARTMENT TYPE S4
101.00 m2
loggia 6.05 m2



LEVEL 0.0m (entrance)	**28.73 m2**
1 bedroom	8.00 m2
2 bathroom	13.20 m2
3 toilet and utility	3.90 m2
4 living	7.60 m2



LEVEL -1.5m	**72.25 m2**
5 living	46.42 m2
6 bedroom	19.25 m2
7 bathroom	6.60 m2
loggia	6.05 m2

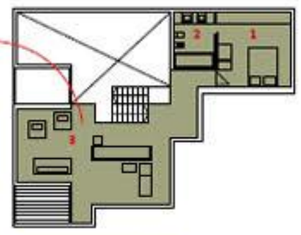


LEVEL +3.0m	**30.60 m2**
1 bedroom	11.60 m2
2 bathroom	5.40 m2
3 living	13.60 m2

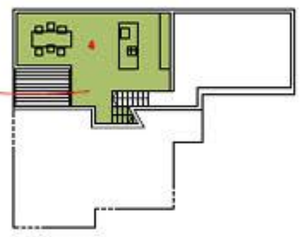
LEVEL 0.0m (entrance)	**44.40 m2**
4 toilet and utility	3.70 m2
5 living	40.70 m2
loggia	6.05 m2

APARTMENT TYPE S2
95.90 m2
loggia 6.05 m2

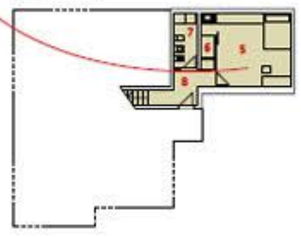
APARTMENT TYPE S5
131.45 m2
loggia 6.05 m2



LEVEL +3.0m	**69.60 m2**
1 bedroom	16.00 m2
2 bathroom	6.60 m2
3 living	47.00 m2
loggia	6.0 m2



LEVEL +1.5m	**35.06 m2**
4 living	35.00 m2
loggia	6.05 m2

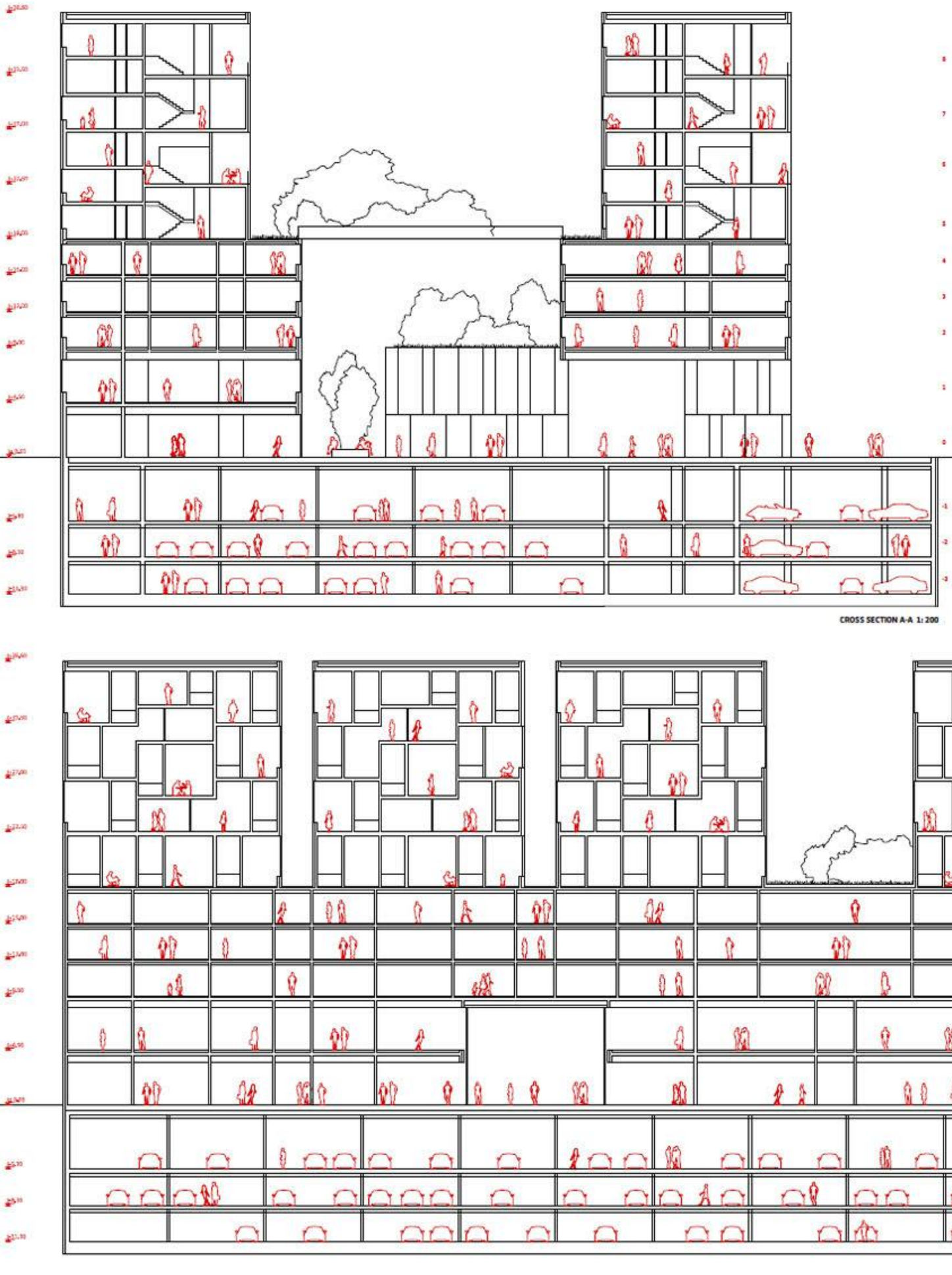


LEVEL 0.0m (entrance)	**26.80 m2**
5 bedroom	16.00 m2
6 toilet	1.90 m2
7 toilet and utility	3.90 m2
8 living	5.00 m2

APARTMENT TYPE S1
95.95 m2
loggia 6.05 m2

LEVEL +3.0m	**30.20 m2**
1 bedroom	16.00 m2
2 bathroom	6.60 m2
3 living	7.90 m2

LEVEL 0.0m (entrance)	**65.70 m2**
4 living	43.90 m2
5 bedroom	16.00 m2
6 bathroom	1.90 m2
7 toilet and utility	3.90 m2
loggia	6.05 m2



CROSS SECTION A-A 1: 200

CROSS SECTION B-B 1: 200