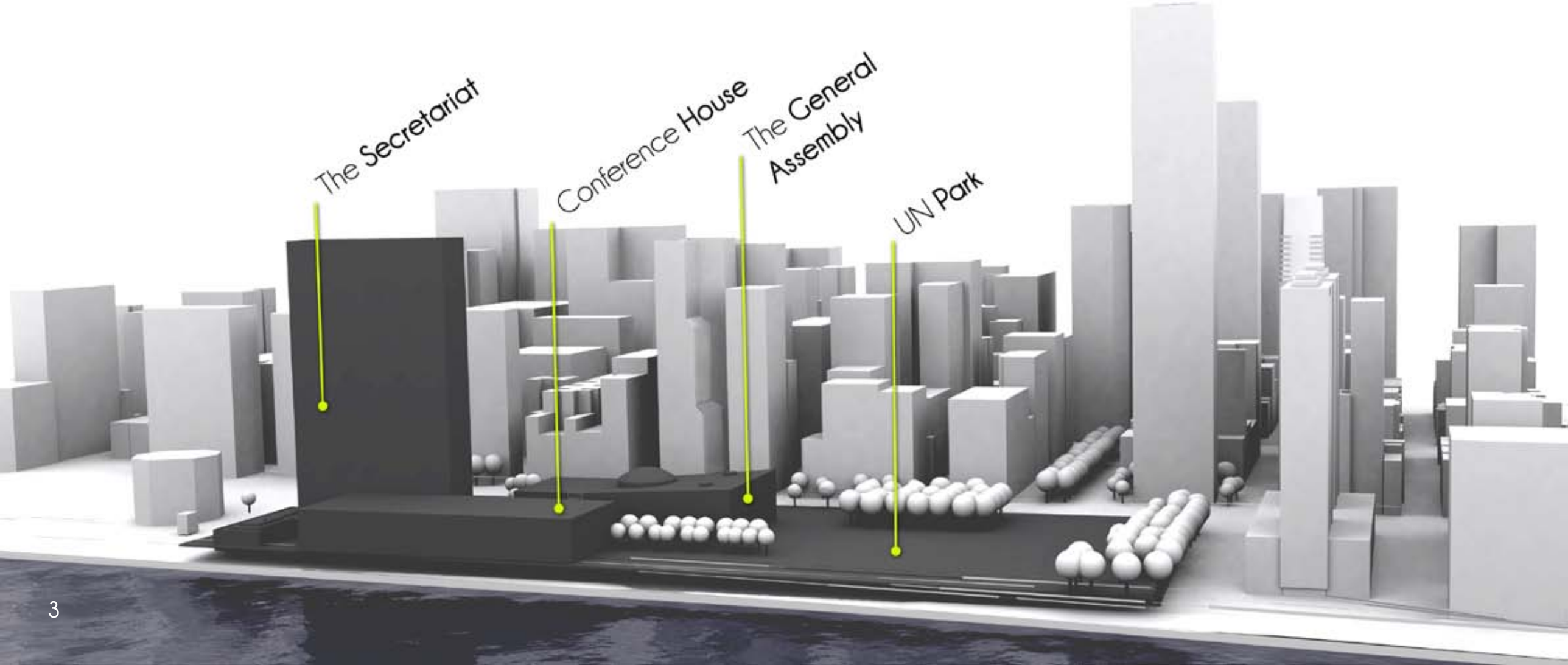
The design for the

Headquarters of Sustainability

United Nations, Manhattan, New York | SADD P5 Presentation | Raghuveer Ramesh

1 Introduction

Top - *Principal organs of the United Nations*



Problem Statement

To generate a master plan that solves the existing problems around the plot and provides a better quality environment

Besides designing the Environmental Council, also provide open space park in the plot which the people of New York could enjoy

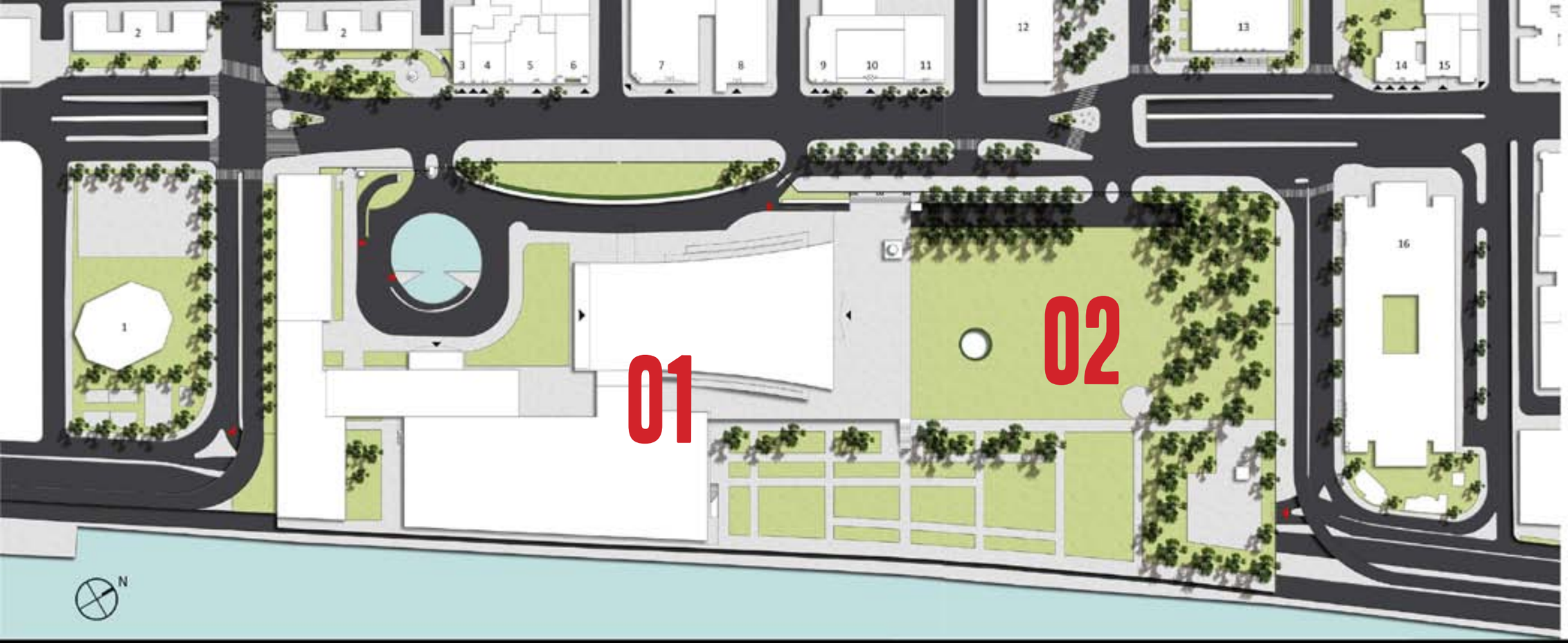
To design the UN Headquarters of Sustainability, or UN Environmental Council, in the existing United Nations Headquarters plot in New York City

Location

1. Located along the waterfront, **the site is relatively quieter** that what life in Manhattan is usually like. While the center could be called as the commercial town, the waterfronts are certainly inclined towards relaxing zones.

2. **The site is at the end of the Central Business District.** For New Yorkers especially, the site would be the ultimate point to finish their day before they leave.

3. Two very important roads in close proximity to our site are the **42nd Street - one of the few two way main roads that boast of some of the most famous architecture** and ultimately culminating at the Times Square. The other is the very important highway - **the FDR Drive, that runs just below the site** along the waterfront.



Top - *Site Plan*
Right - *Bird's eye view of the site*

Character of the site

1. The UN Plot already comprises of **a series of very famous landmark buildings** designed by prominent architects like Le Corbusier and Oscar Niemeyer. It is also one of the one amongst the **famous tourist attractions** in New York City.

2. Existing is **a large park** for the tourists, that also has a series of sculptures gifted by many countries to the United Nations. The park has an **added value because of the scarcity of open spaces around the district.**

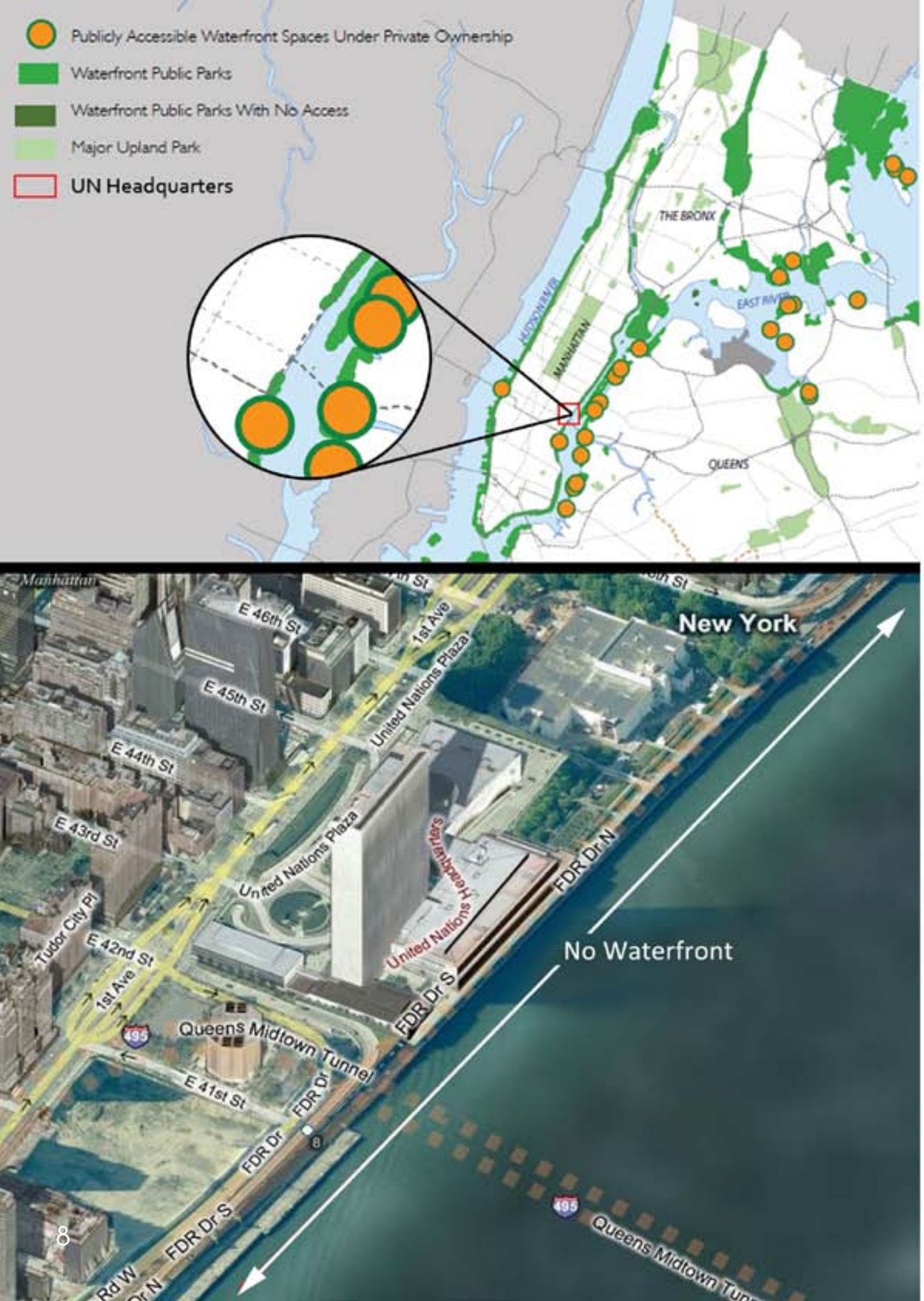
3. Another exciting character of the site is that, it is **present along a waterfront** that provides a great view of the East River, Brooklyn and Queens.

Current issues
with the site

1. Discontinuous Waterfront

2. Lack of open spaces

3. Security problems posed by the FDR running just below the UN plot.

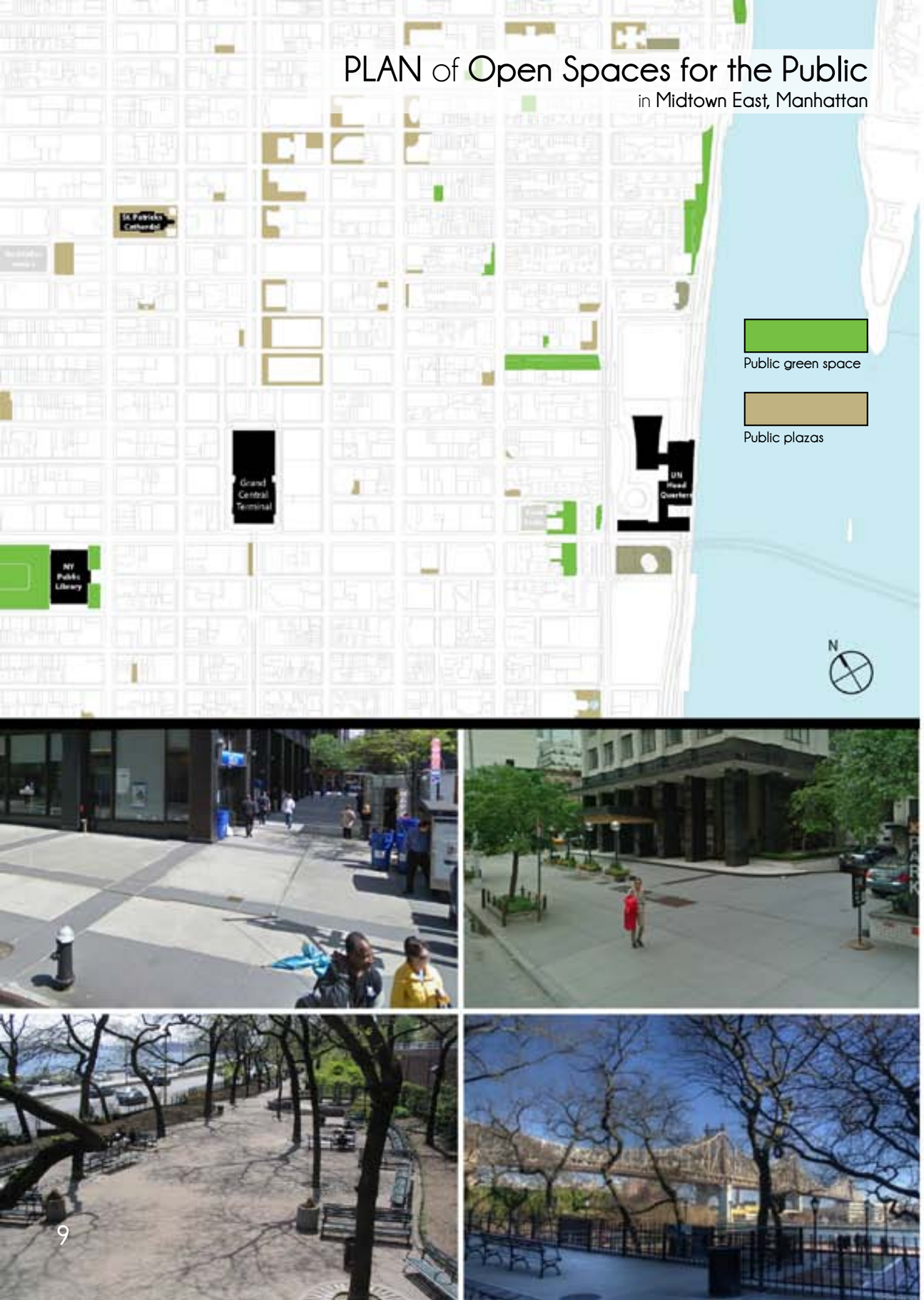


Top - *Photograph showing the end of the waterfront*
Left - *Plan and perpective portraying the discontinuity in the New York waterfront*

01 Discontinuous
waterfront

The government is trying to **create a continuous waterfront** all along the perimeter. In most cases, **the waterfronts are the only direct connection between man and nature.**

The UN Headquaters interrupts otherwise what is a good continuous waterfront. **The access is cut off between the 38th to 58th streets** because of the presence of this plot and the FDR Drive. It has become difficult to achieve this continuity majorly because of **security reasons and unsuccessful talks with private property owners in these areas.**

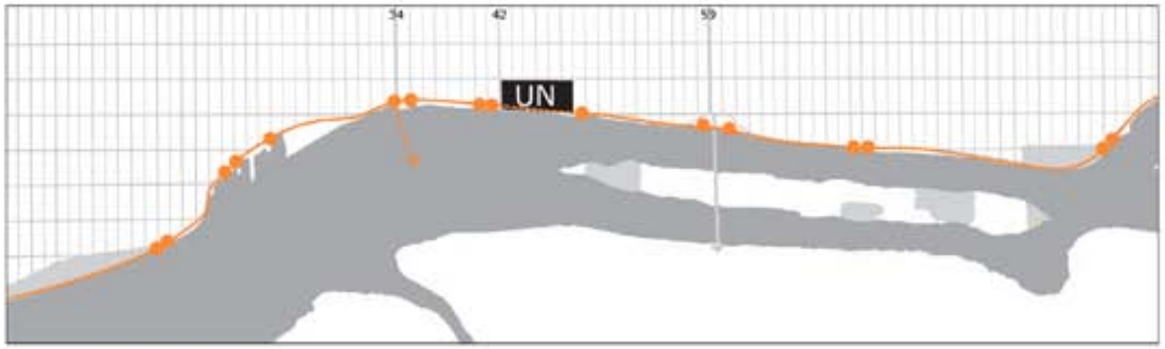


Top - *Photograph showing a typical crowded street in NYC*
Left below - *Photographs of the quality of open spaces in the form of plazas, small parks and waterfronts*

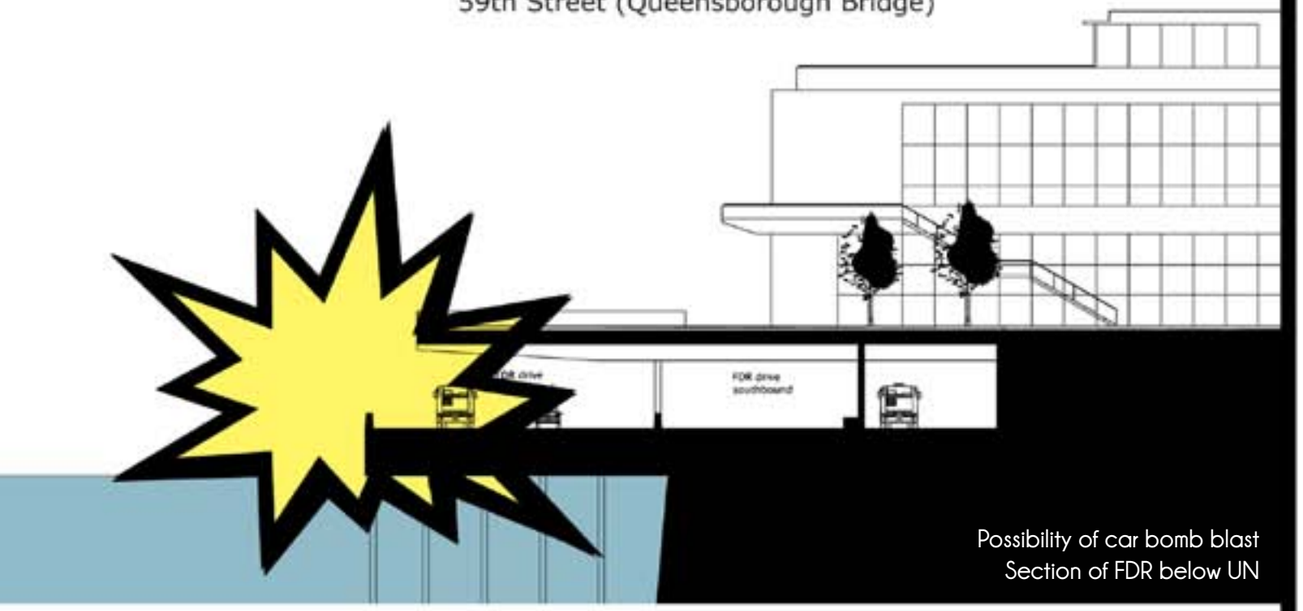
02 Lack
of open spaces

The public open spaces Plan clearly describes the **scarce** amount of spaces the people of Manhattan can use to relax during the day. The very few that exist are in the form of plazas outside the tall sky scrapers, a small number of public parks with greenery and the waterfront parks along the East River.

CURRENT SITUATION: HIGHWAY AND ITS JUNCTIONS

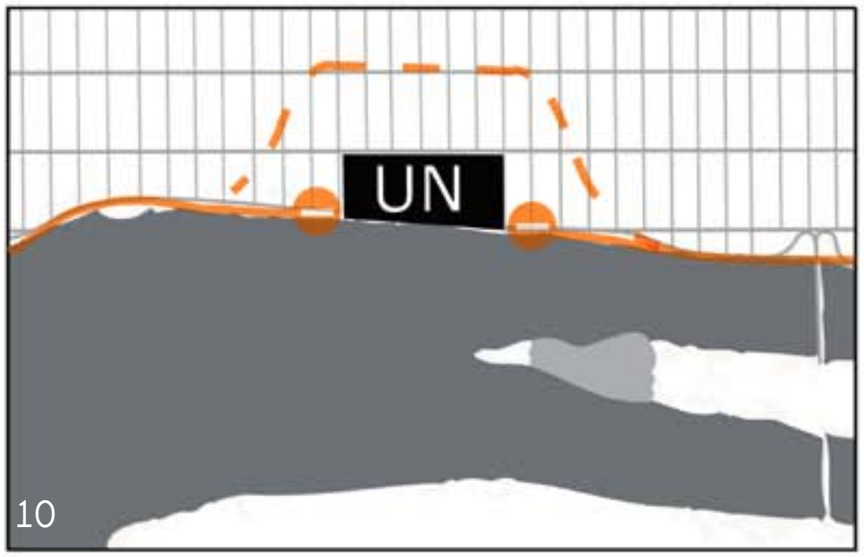


Highway exits and entries all along the East River
Most important junctions: 34th Street (Queens Midtown Tunnel)
59th Street (Queensborough Bridge)



Possibility of car bomb blast
Section of FDR below UN

Traffic Situation when UN is in session



Extent of the FDR Drive

Points where it is shut off

New route when FDR Drive is shut

Top - *Photograph showing FDR Drive below the United Nations platform*

03 Security & Traffic

problems created by the FDR Drive

The highway (FDR Drive) running below the United Nations causes a **huge security problem because of the possibility of a car bomb blast** when the UN is in session. Ever since the 9/11 attacks, the United States has taken extra measure to ensure full security. Because of this, the **FDR Drive is shut off and the traffic is diverted into the city. This in turn creates congestion inside the city.**

Generating values for the design

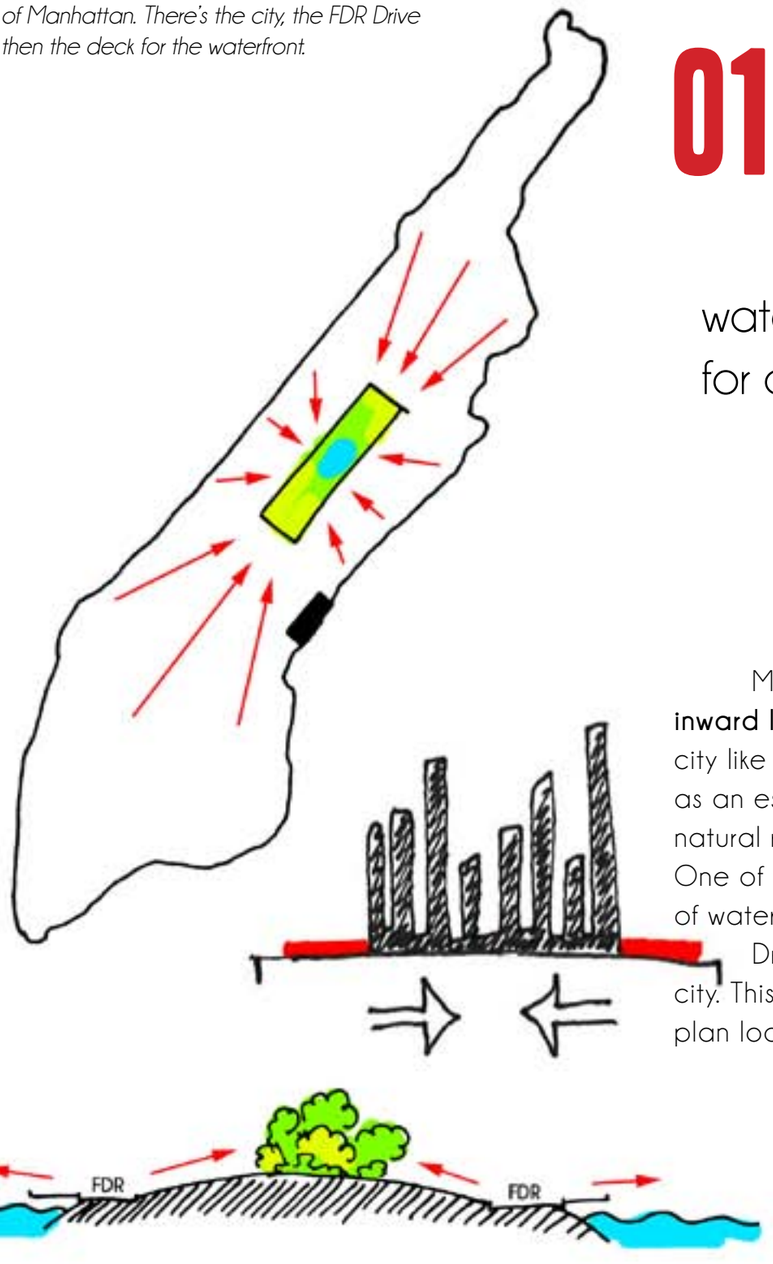
through research and analysis

Photograph of the existing waterfront in the East side of Manhattan. There's the city, the FDR Drive and then the deck for the waterfront.

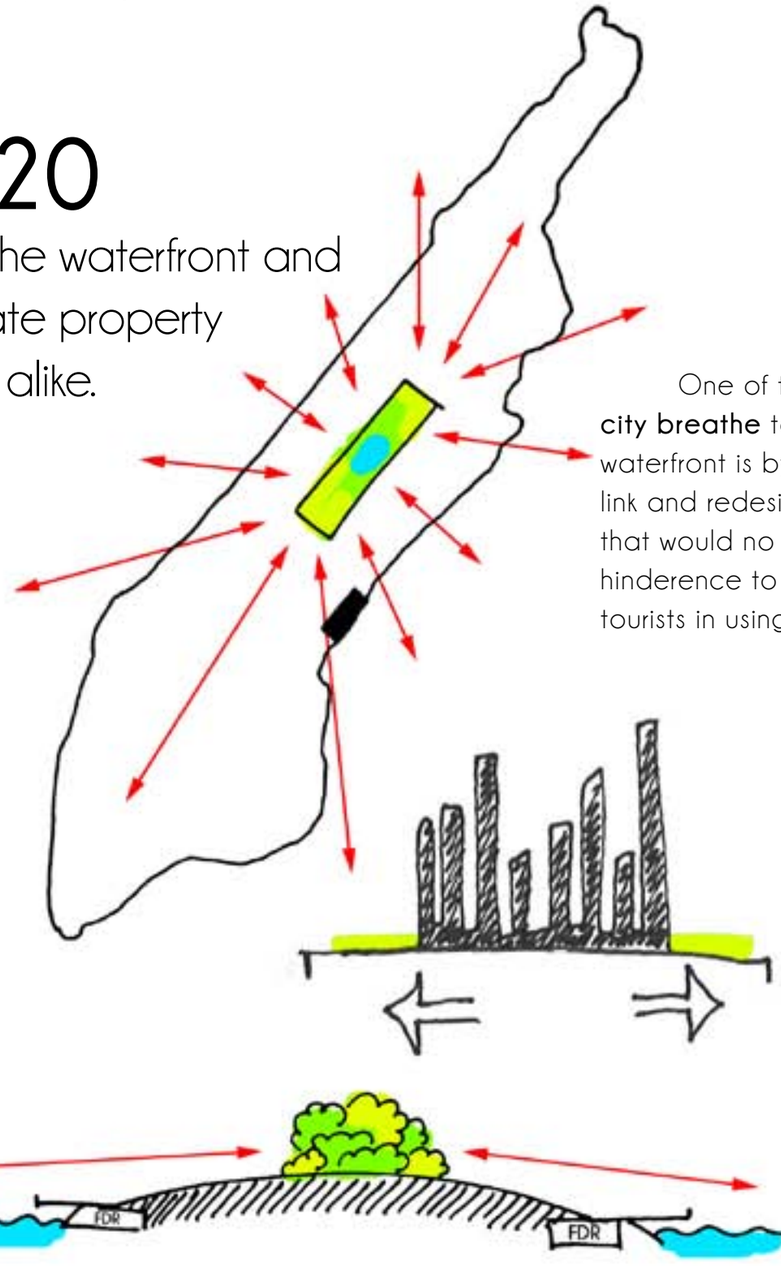
Top - *Photograph showing the end of the waterfront*

01 Goal NY 2020

Expand public access to the waterfront and waterways on public and private property for all New Yorkers and tourists alike.

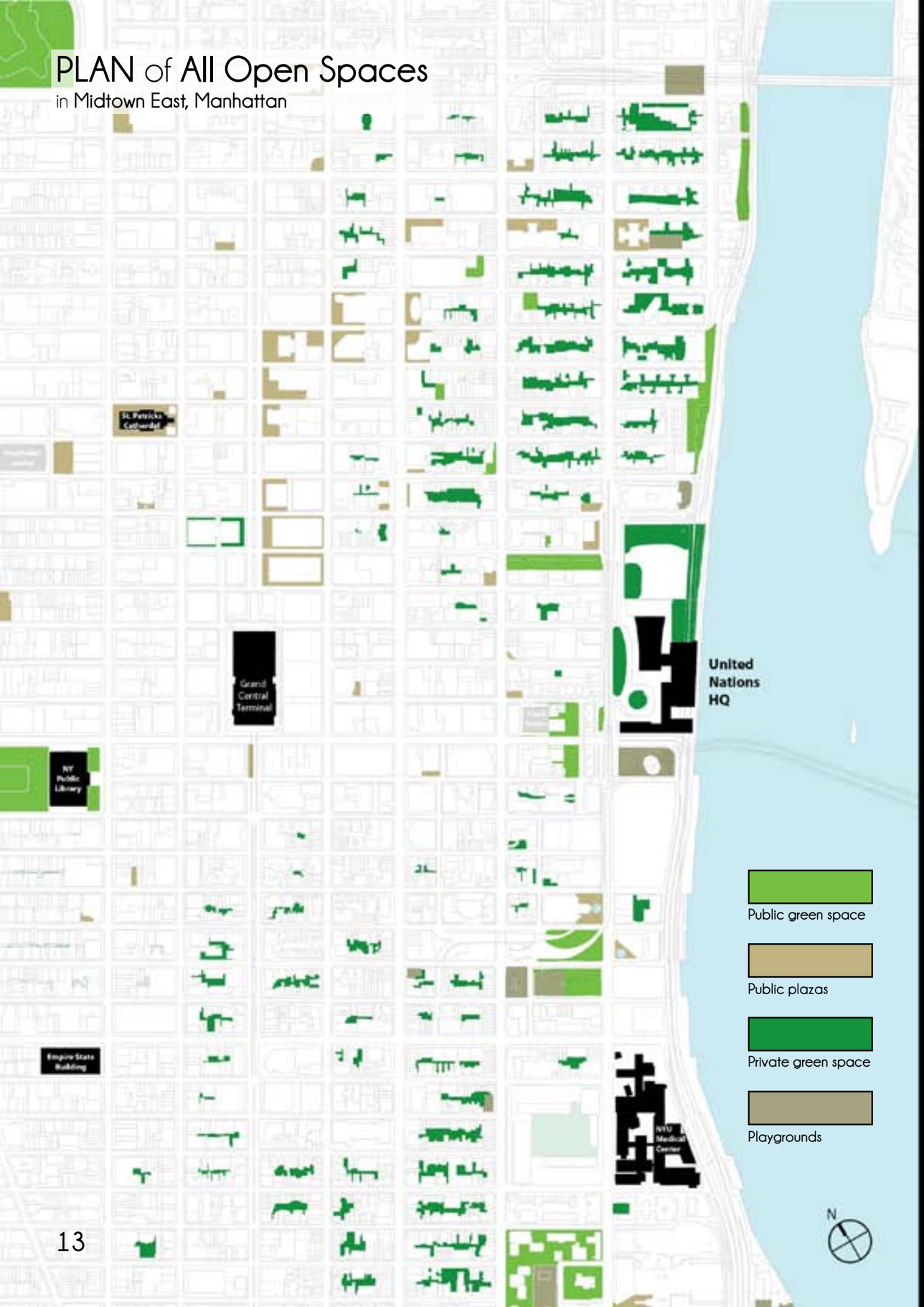


Manhattan has always been an **inward looking city.** It is strange that an island city like this does not consider its waterfront as an essential part of the city's natural relaxation point.
One of the most important reasons why the use of waterfront is scarce is because of the FDR Drive that runs along the perimeter of the city. This naturally makes the design of the urban plan look into Central Park.



One of the ways to **make the city breathe** towards the waterfront is by creating a direct link and redesigning the FDR Drive that would no longer be a hinderence to the New Yorkers or the tourists in using the waterfront.

PLAN of All Open Spaces
in Midtown East, Manhattan



PLAN of Open Spaces for the Public
in Midtown East, Manhattan

02 Parks & Public space

Ensure that all New Yorkers live within a 10 minute walk of a park.

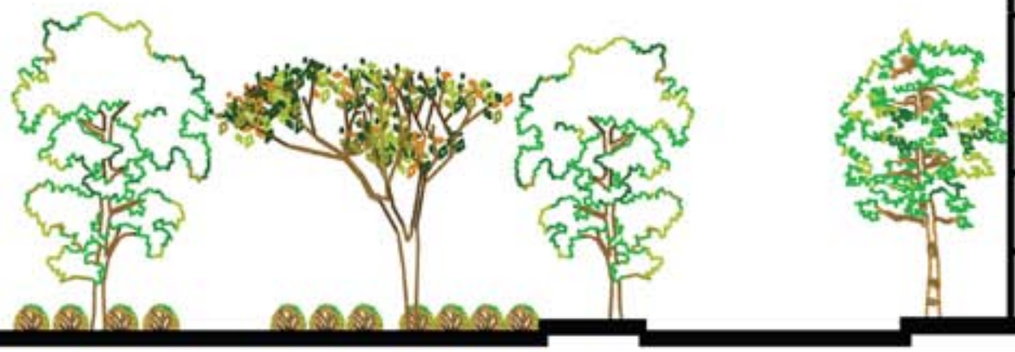
There are a few parks located around the 10-minute radius of the United Nations. But considering the population of the Midtown East distinct and the actually size of the parks it is obvious that the ratio is very poor. It makes it our responsibility to solve this issue and provide some quality to the existing natural environment.

03 Go Green

Rejuvenate ecology in the city

The massive amount of construction in Manhattan has led to a state with no or very little of the ecology in the city to co-exist. The creation of an unsustainable world means we should try and rejuvenate some amount of the ecology at least.

Photograph of a typical street in New York city. It is filled with trees along the pavements and provides enough shade to the pedestrians

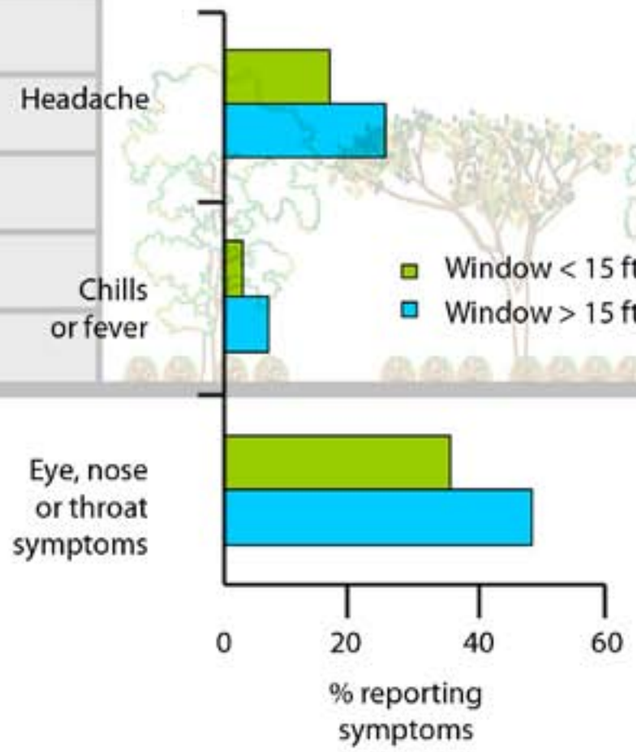


Photographs of typical office interiors in New York. It is clear that there is no contact with nature

04 The human experience

in relationship with nature

The dotted line is the end for human contact with nature



Seated access to window and green spaces = Health + Induvidual productivity

A study conducted by Carnagie Melon University, USA on 11 office buildings in California, showed that there was **at least a 25-50% reduction in reported in sick building syndromes for occupants located within 15ft of a window or green space.**

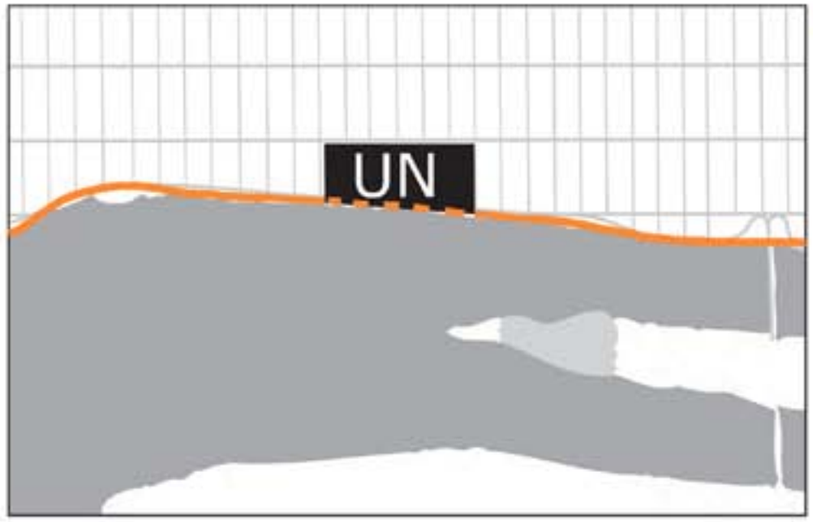
Left - *Photograph of one of the statues in the United Nations from the Dag Hammarskjold Plaza.*
Top - *Drawing explaining the approach to the site and percentage of population from different parts of the city. It also indicates the possible axis between the United Nations and the plaza.*

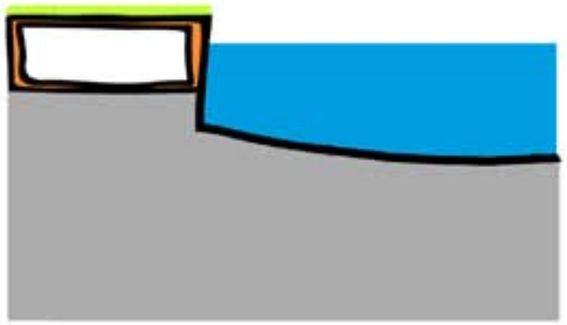
05 Approach to the site

Analyze the importance of an axis and help generate better usage of the Dag Hammarskjold Plaza.

02

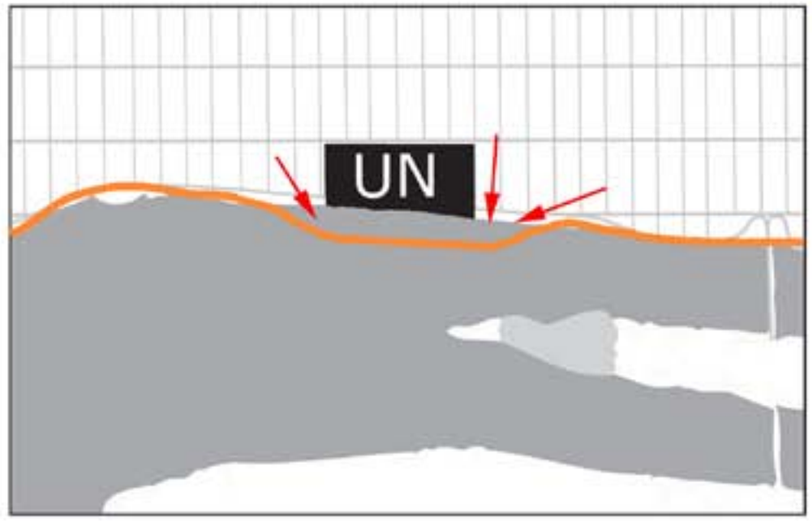
Master Plan

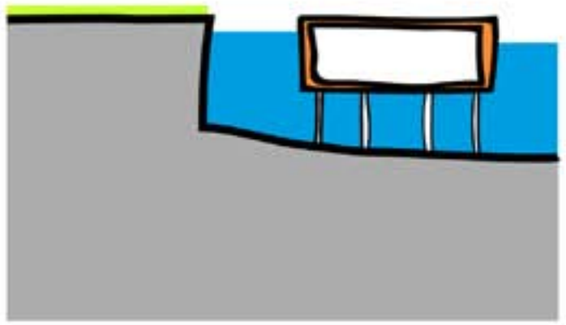




01 Current Situation

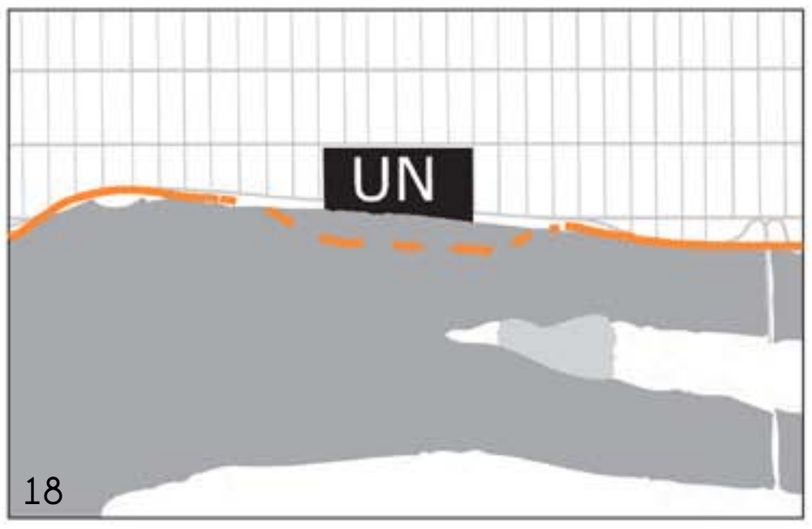
The FRD Drive lies just below the UN Headquarters along the East River waterfront.

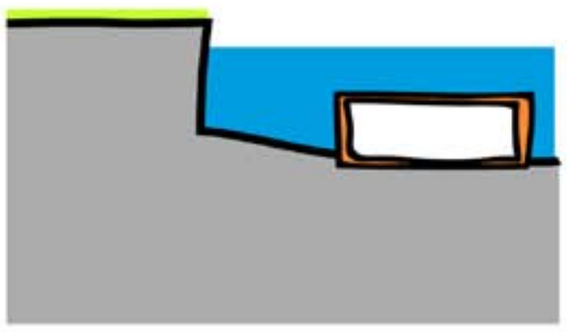




02 Pushing out the highway

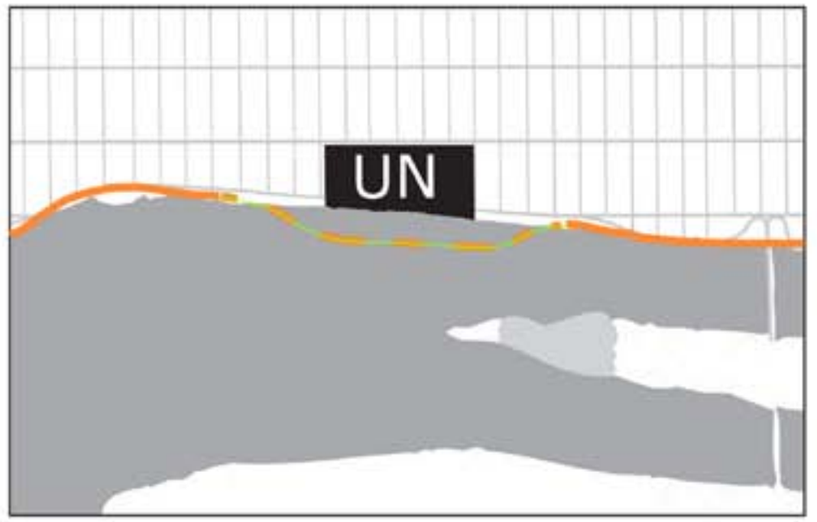
Removing the FDR Drive from the UN Plot and placing it in the water ensures the FDR is no longer a threat to security.





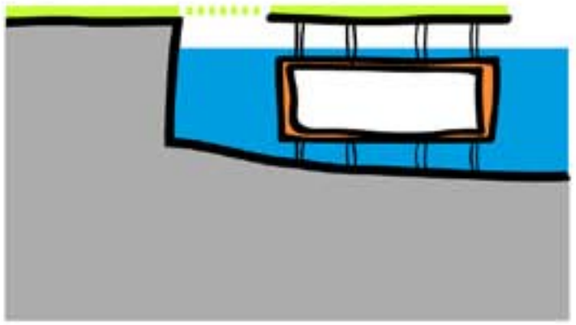
03 Move it underwater

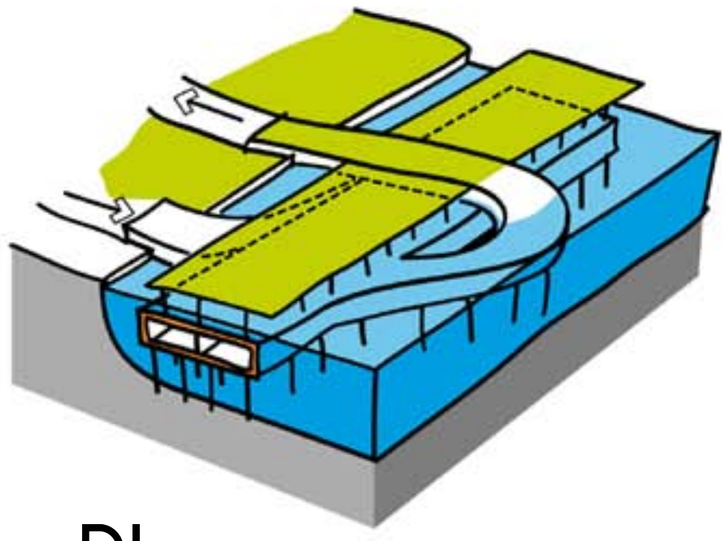
The repositioning of the FDR Drive still does not ensure a continuous waterfront because, the United Nations still has to be a secure site.



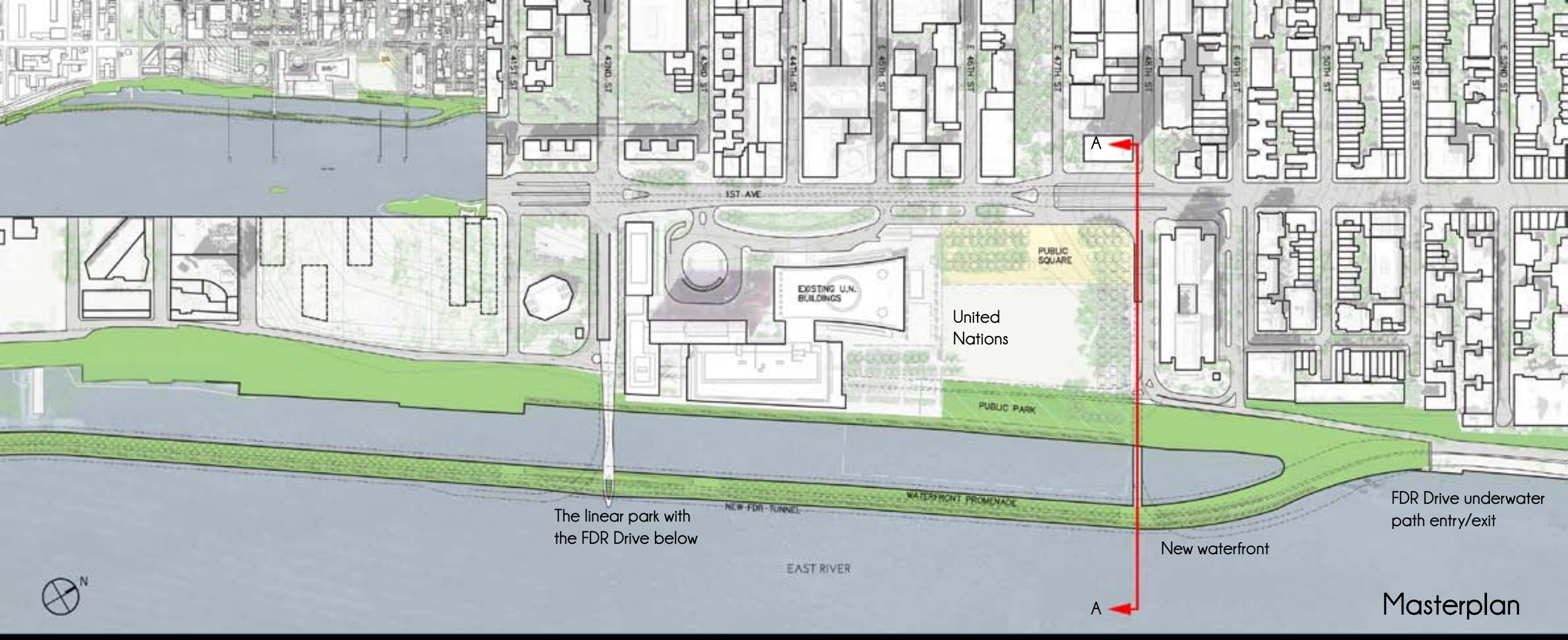
04 Green belt above the new FDR Drive

With this addition, not only do we ensure the security of the UN plot but also create an opportunity to fix the missing link in the waterfront and provide the New Yorkers and tourists with yet another attraction.



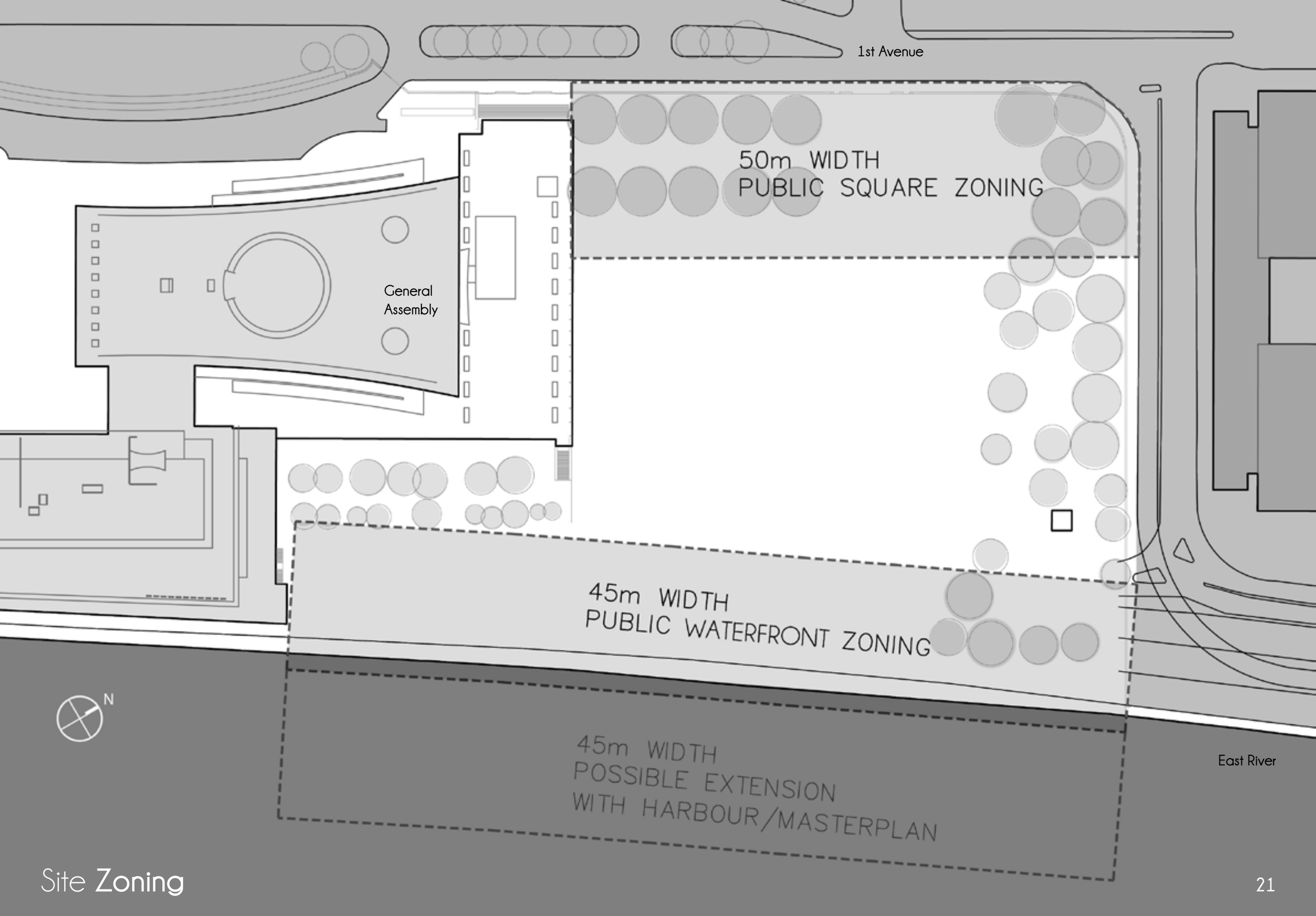


Master Plan development



Masterplan

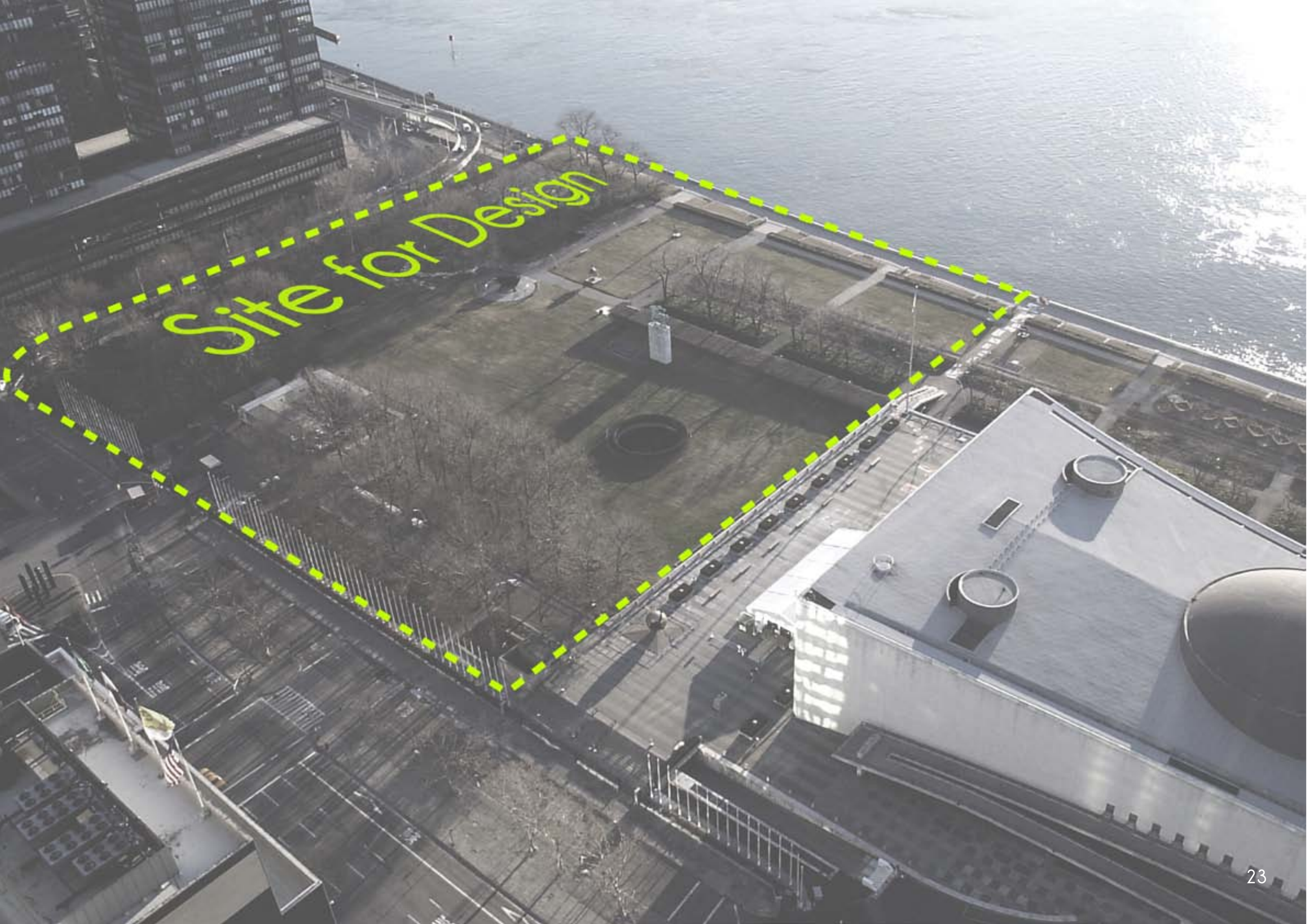
Section - A


1st Avenue
50m WIDTH
PUBLIC SQUARE ZONING
General
Assembly
45m WIDTH
PUBLIC WATERFRONT ZONING
45m WIDTH
POSSIBLE EXTENSION
WITH HARBOUR/MASTERPLAN
East River
N

Site **Zoning**

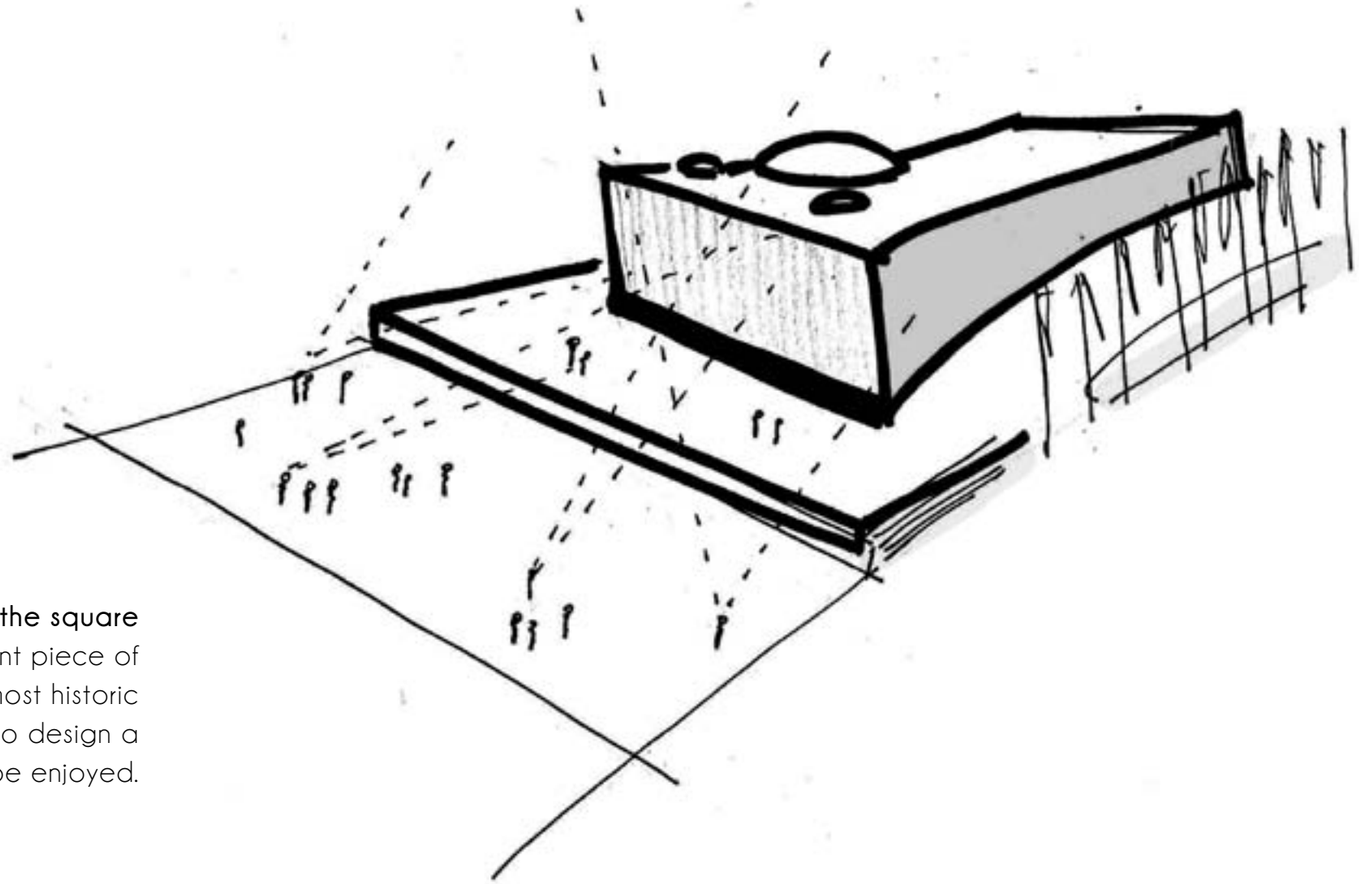
13

UN Square


Site for Design

Zoning the site

Analyzing the importance of axis, surroundings and sizes.



01 Creating the square

The General Assembly is a very important piece of architecture and like most historic and famous buildings, it is necessary to design a forecourt from where the building can be enjoyed.

References

St. Peters square, Rome

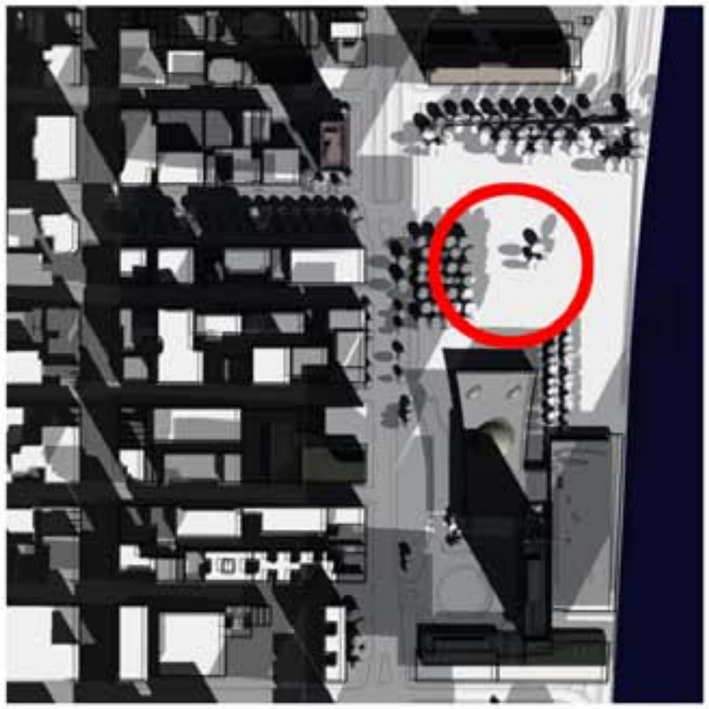
Center Pompidou, Paris

Zoning the site

Analyzing the importance of axis, surroundings and sizes.

June 21st
9AM, 12PM and 3PM

September 21st
9AM, 12PM and 3PM



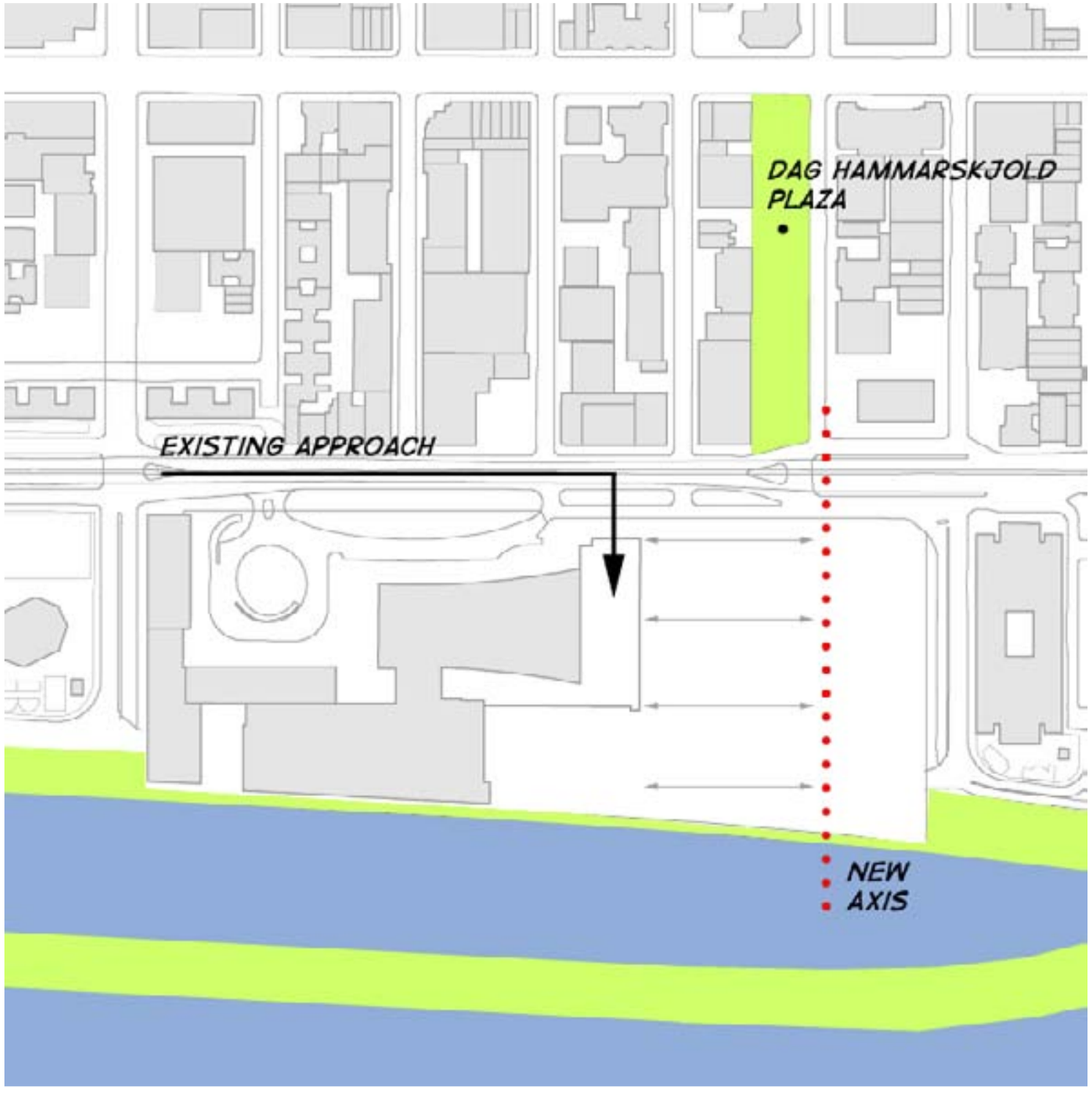
December 21st
9AM, 12PM and 3PM

02 Sun Study

Three dates in the year was chosen and an images was developed for each of the 3 dates that showed the position of shadows created by the surroundings on the site at 3 different times (9am, 12pm and 3pm). From the 3 images it is clear that for most part of it (with the exception of 3pm in extreme winter conditions) the position of the square will be naturally lit and not be present in the shade.

Zoning the site

Analyzing the importance of axis, surroundings and sizes.

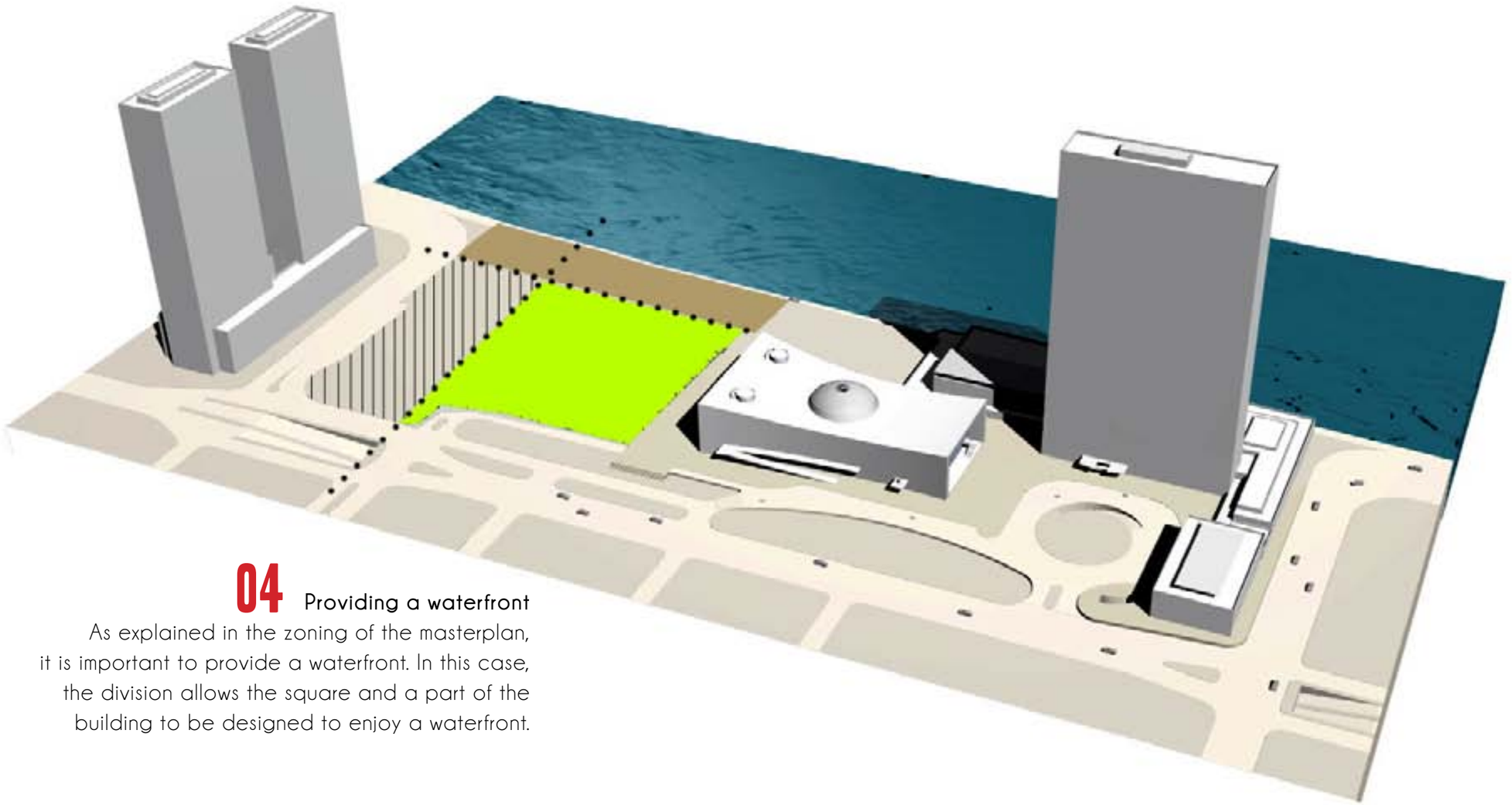


03 Working on the axis

After the location of the square was decided, the size was the be determined. After a strong conclusion that the area lacked open spaces, it was important to provide as big a square as possible. For this purpose, the building footprint is greatly reduced and its borders are aligned with the size of the existing New York block.

Zoning the site

Analyzing the importance of axis, surroundings and sizes.



04 Providing a waterfront

As explained in the zoning of the masterplan, it is important to provide a waterfront. In this case, the division allows the square and a part of the building to be designed to enjoy a waterfront.

Manhattan, New York

The big apple as it is popularly known, the residents also call it *"going to the city"*. The first thing one would notice about Manhattan are the people who are always on the move.

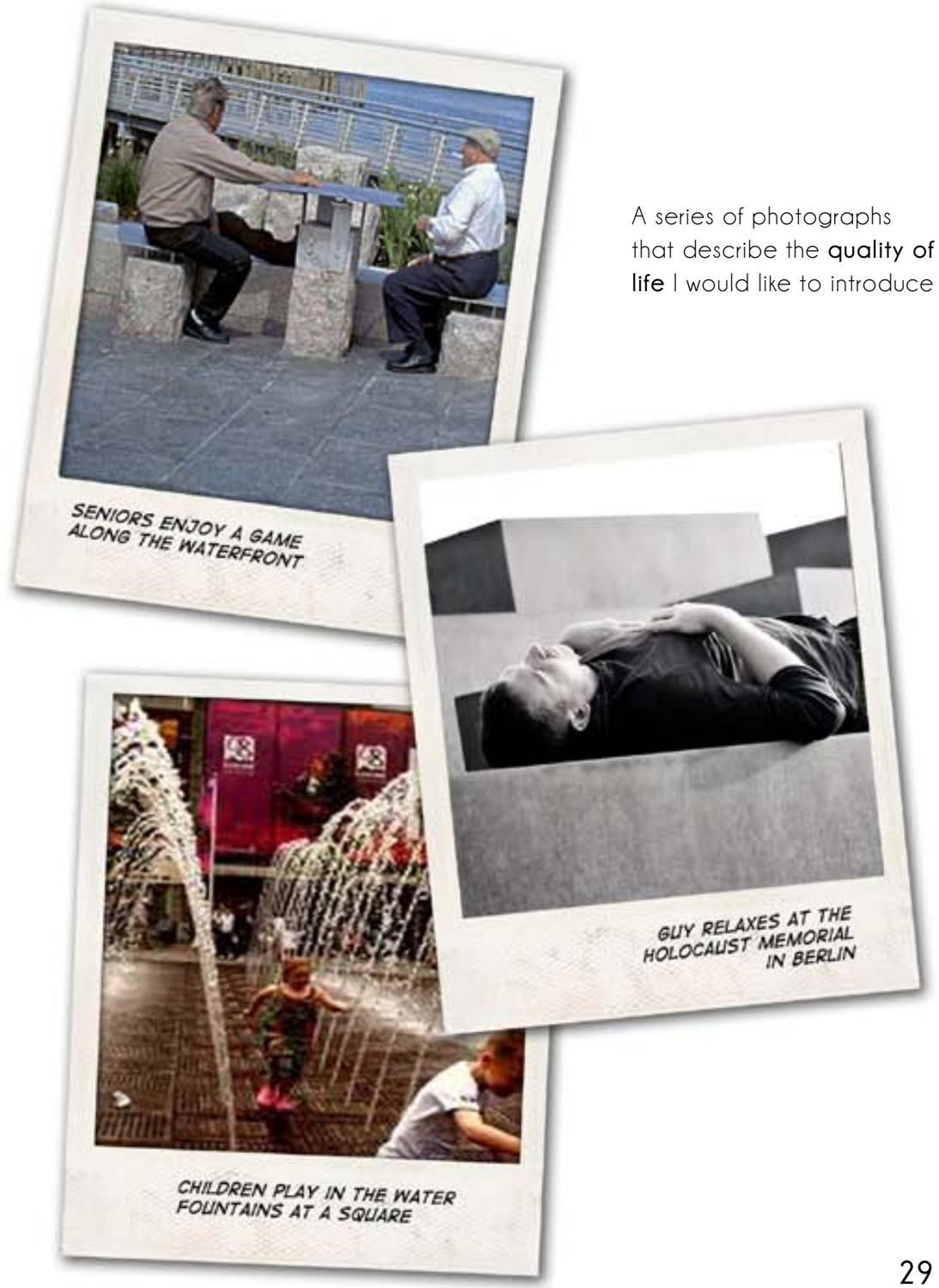
The UN Square

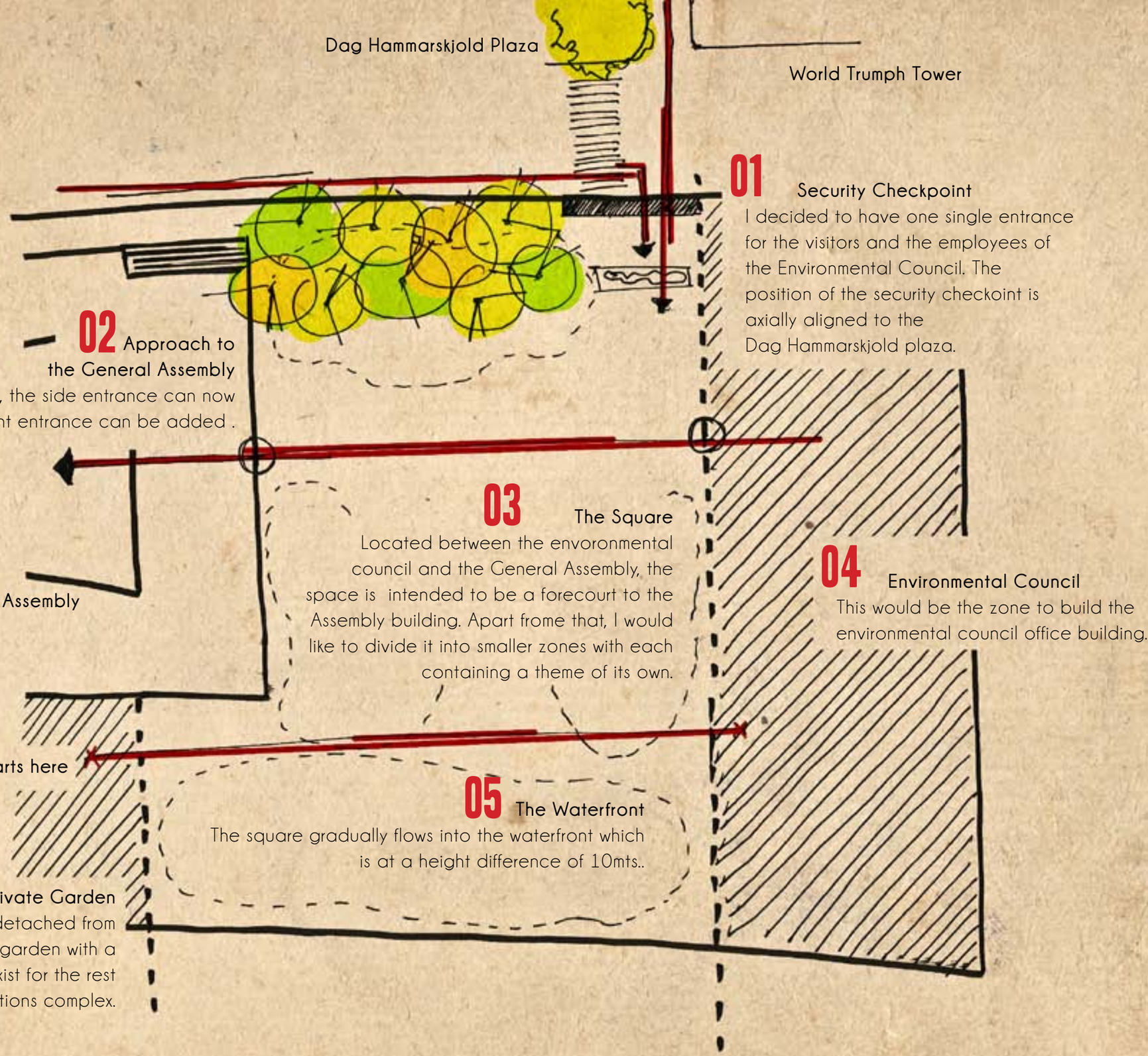
Giving the people in New York a new kind of a park.

The photographs below descriube the quality of life in fast moving New York. The culture is to be always on the move and people find even the simplest of places to relax. For example we see stairs or railiing being used to relax a bit or have a quick lunch.

A series of photographs that describe the **New York Lifestyle**

A series of photographs that describe the **quality of life** I would like to introduce





01 Security Checkpoint

I decided to have one single entrance for the visitors and the employees of the Environmental Council. The position of the security checkoint is axially aligned to the Dag Hammarskjold plaza.

02 Approach to the General Assembly

For the majestic structure that it is, the side entrance can now be removed and a grand front entrance can be added .

03 The Square

Located between the envoronmental council and the General Assembly, the space is intended to be a forecourt to the Assembly building. Apart frome that, I would like to divide it into smaller zones with each containing a theme of its own.

04 Environmental Council

This would be the zone to build the environmental council office building.

05 The Waterfront

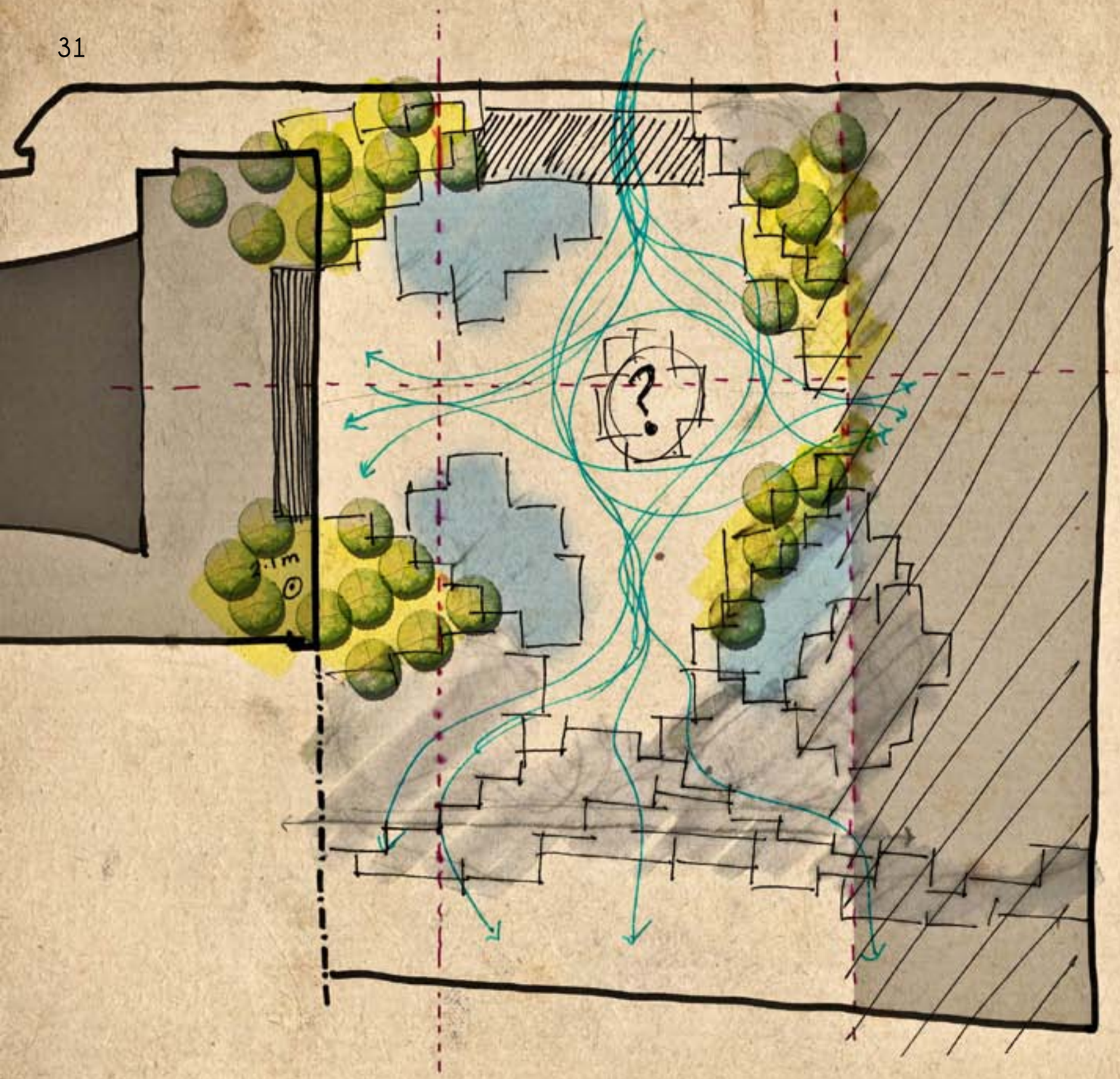
The square gradually flows into the waterfront which is at a height difference of 10mts..

06 The Private Garden

This part of the site shall be detached from the square and the private garden with a waterfront could continue to exist for the rest of the United Nations complex.

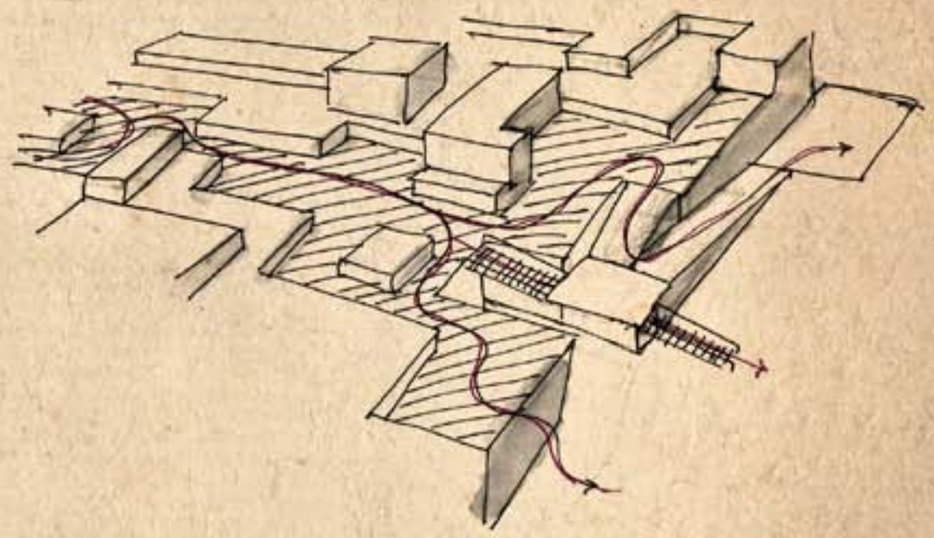
The UN Square

Concepts



The square is pretty big in size and it was necessary to fragment it into smaller zones. based on the analysis from choosing the important parts of the site and the qualities that come along with them, the routing for the square was also determined. With the entrance, waterfront, the General Assembly and the Enivronmental Council forming the 4 sides of the park - the movement should not be contained, but at the same time it is to be made sure that it is not chaotic.

One of the conclusions from the research was to design a square where the people of New York could relax. A theme in the form with solid blocks that are made of different levels, make it a playful ambience and yet an informal arrangement where each and everyone could choose to relax in his/her own way.



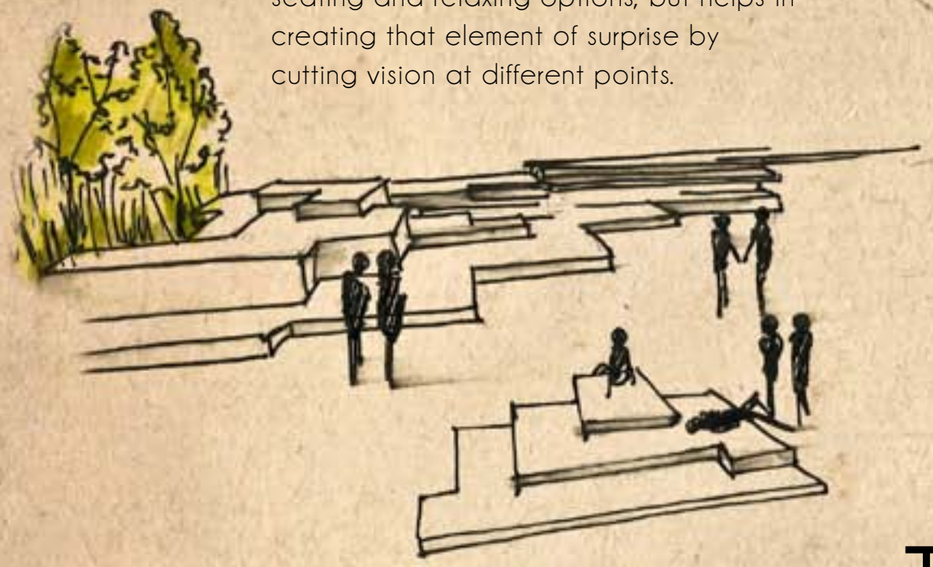
The presence of different levels would also help in creating that environment that unfolds in levels. That helps in generating that element of surprise for the visitors of the park.

The UN Square

Concepts

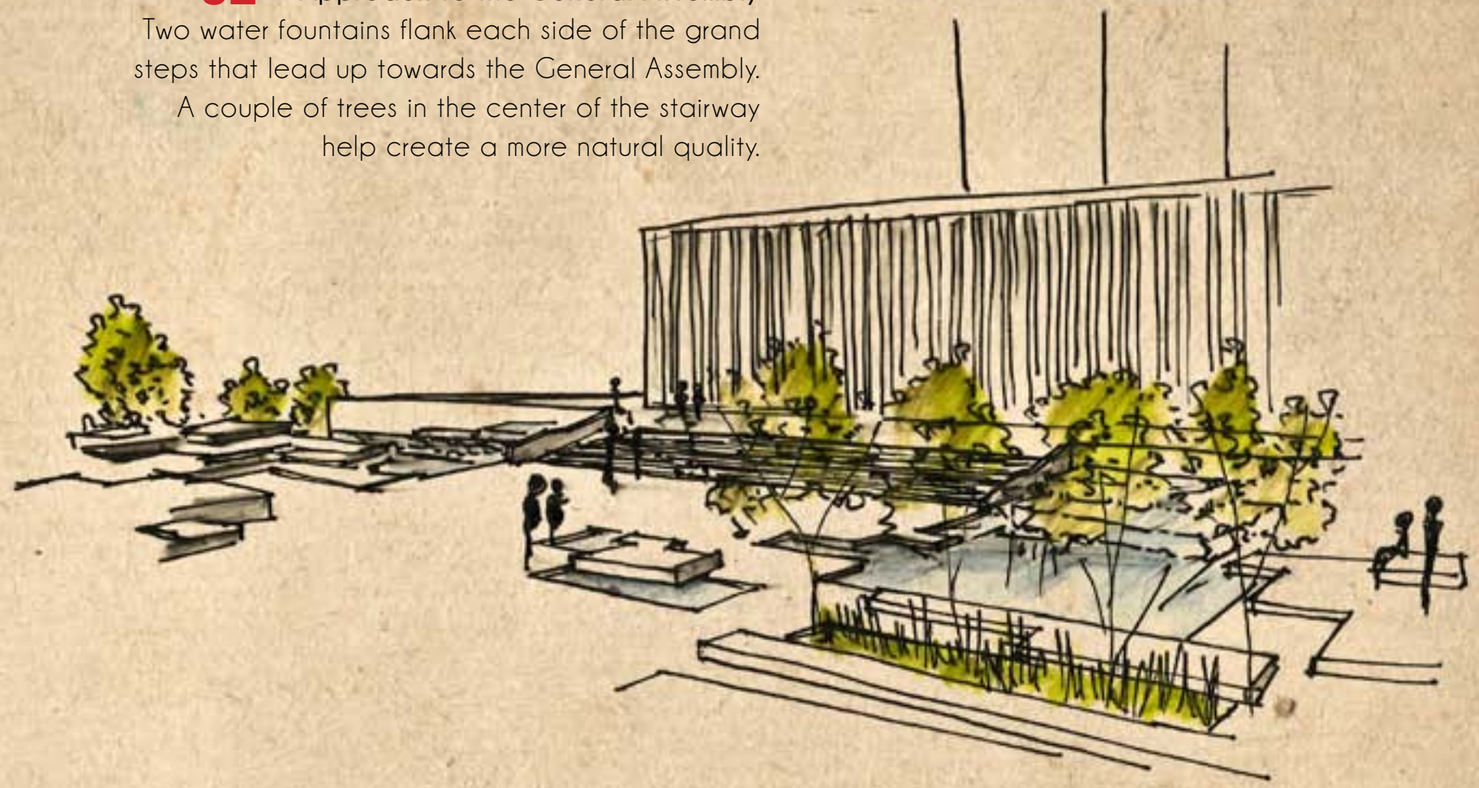
01 The seating blocks

The whole theme of the square is to have these kind of blocks that rise and dip in levels. It not only creates different informal seating and relaxing options, but helps in creating that element of surprise by cutting vision at different points.



02 Approach to the General Assembly

Two water fountains flank each side of the grand steps that lead up towards the General Assembly. A couple of trees in the center of the stairway help create a more natural quality.

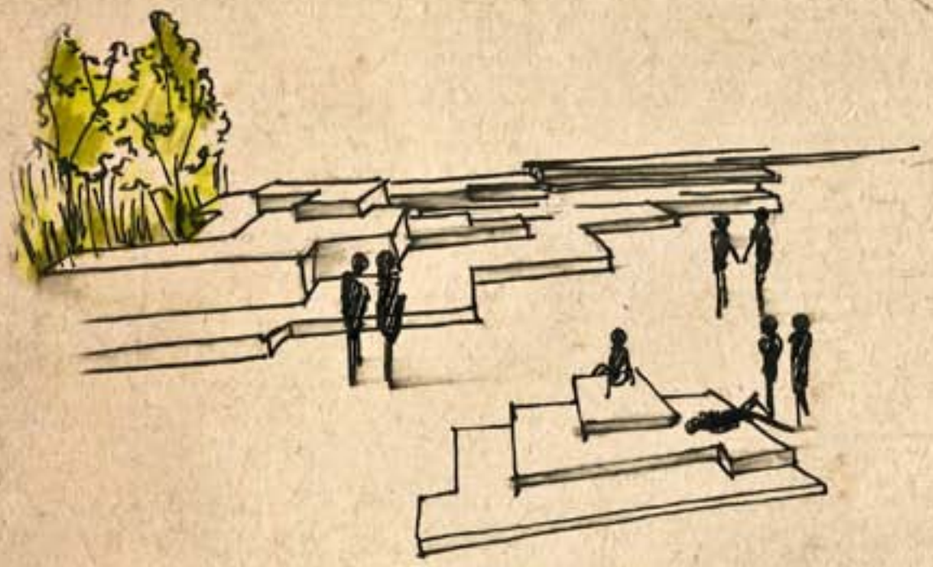


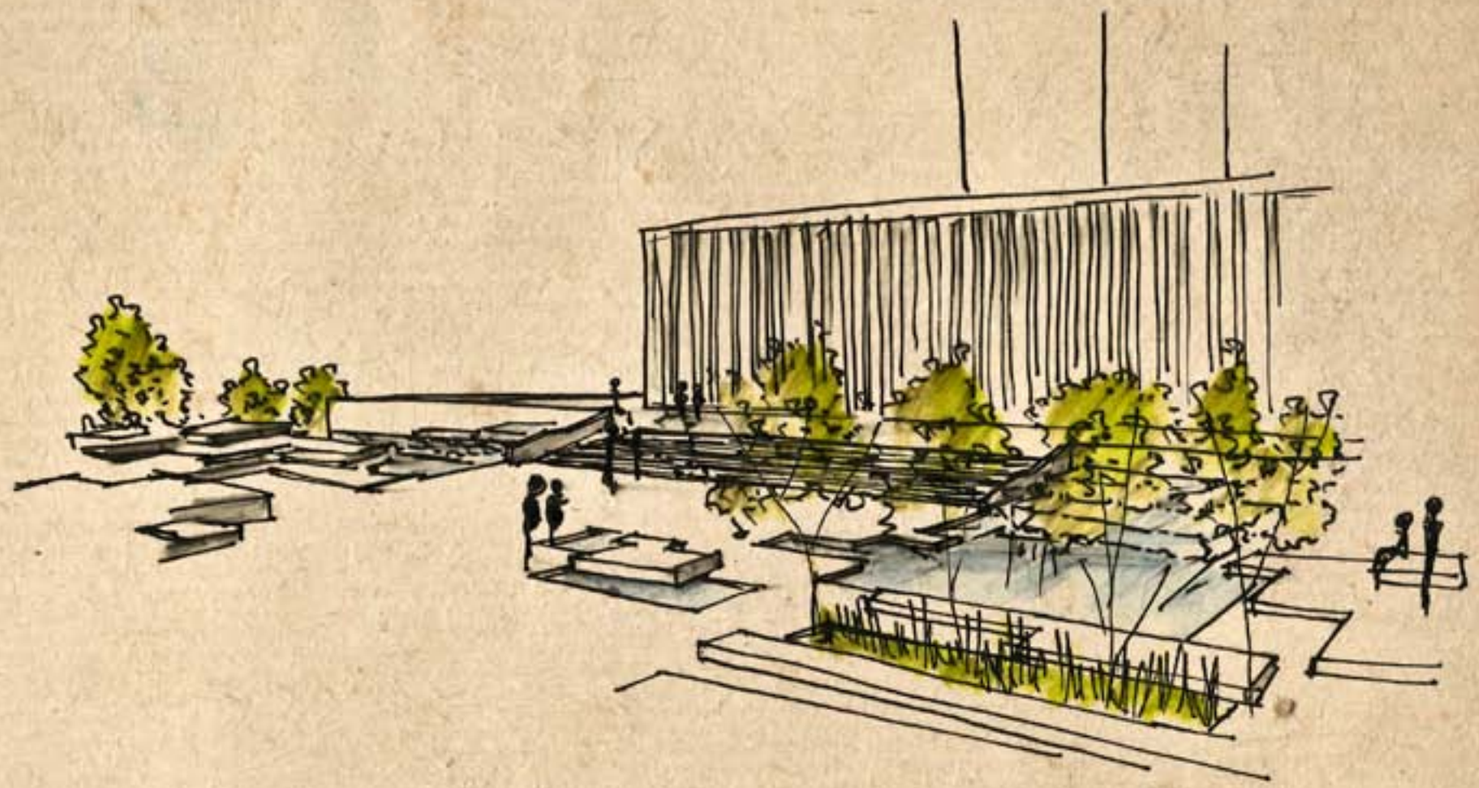
The UN Square

Concepts

03 The square

Like said before, the main theme is for people to relax and enjoy the view of the General Assembly. Ot the otherside of the square will be the Environmental Council - a lush green building.



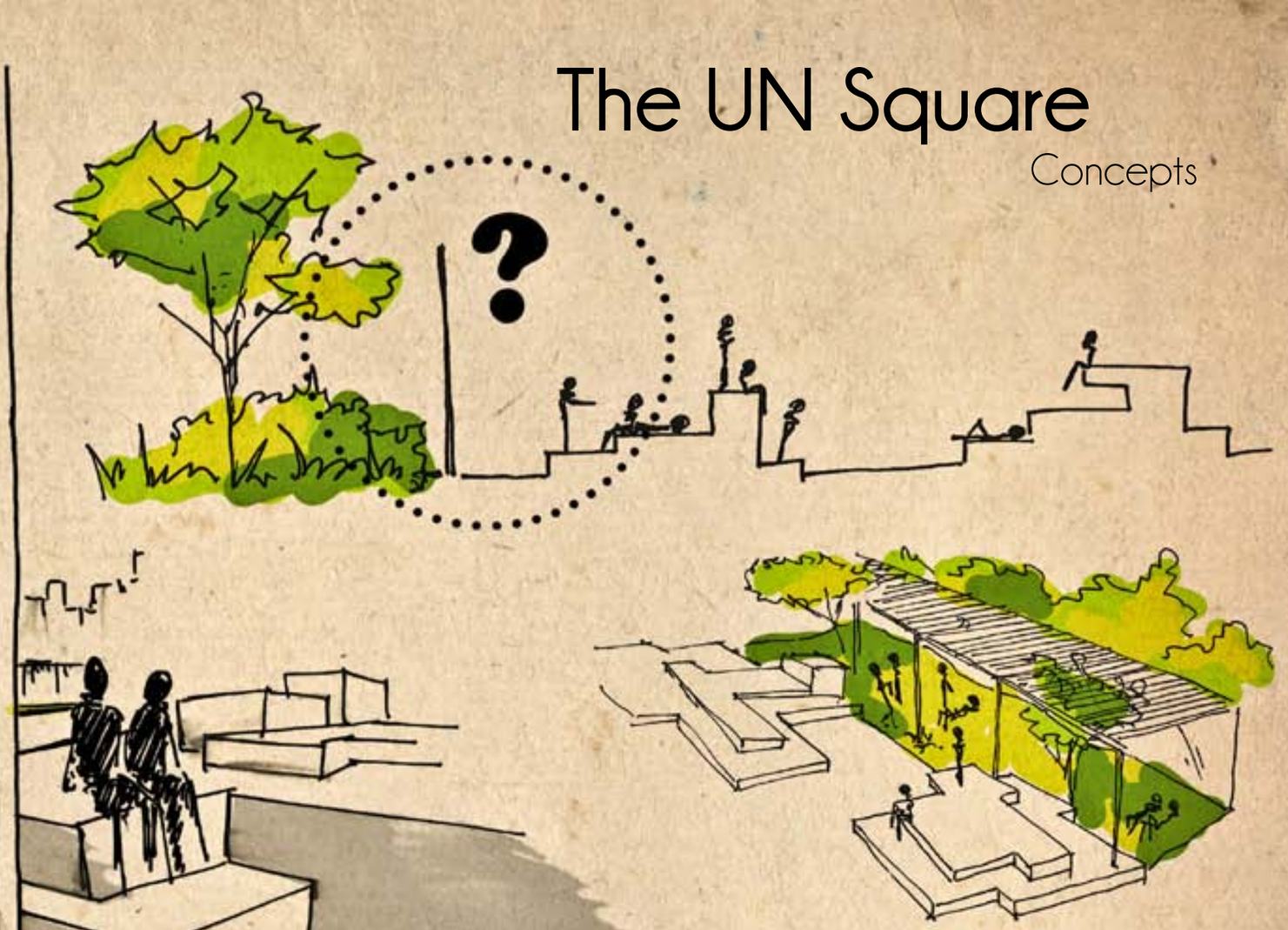


The UN Square

The UN Square

The UN Square

Concepts



04 The Link

It was important to create a gradation between the UN Environmental council building and the square. This link is designed as a semi open space covered with a pergola like structure. Below it is the lawn that is like a continuation of the green from the building. People get the required shade as well to relax on a hot sunny day.

References

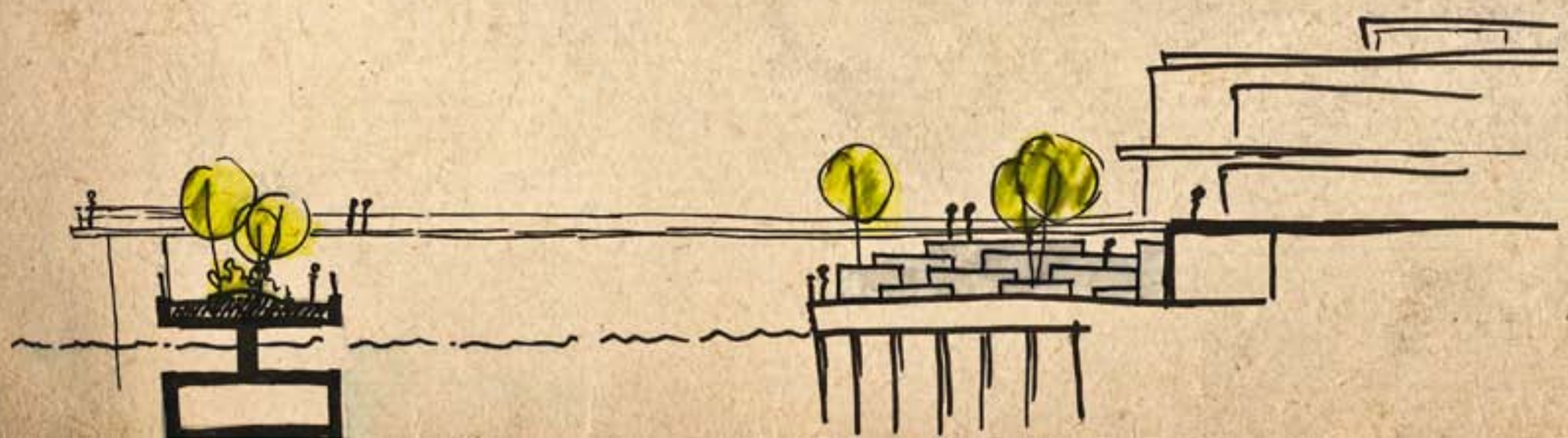
AT&T Performing Arts Center Margot and Bill Winspear Opera House, Dallas, USA

The UN Square

The UN Square

The UN Square

Concepts



05 The Waterfront

The theme of the square is also used to create the waterfront. The square gradually dips in height in the form of the concrete steps. It also acts like an amphitheatre with the East River as a backdrop.

The UN Square

The UN Square

14

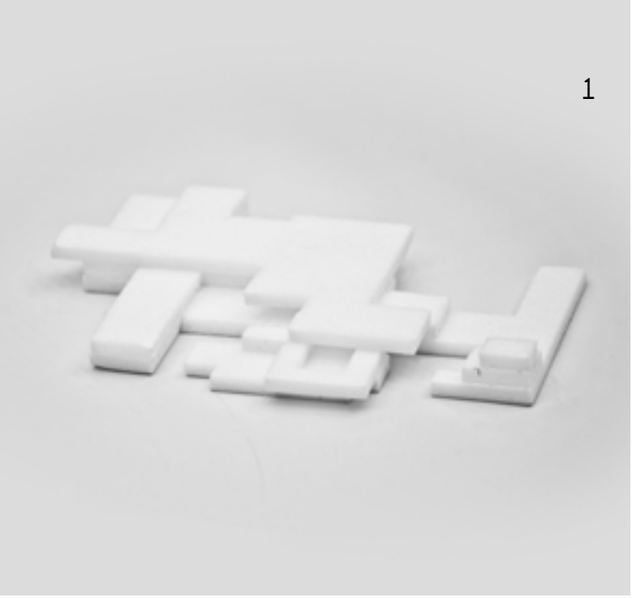
UN Environmental Council

Goals

To design a building that portrays itself as a billboard for sustainability

Creating a workplace that is condusive as a very healthy environment and one that provides a closer relationship with nature

Ensure the building integrates well with the surroundings and within itself. To create a strong continuity with the concept design of the UN Park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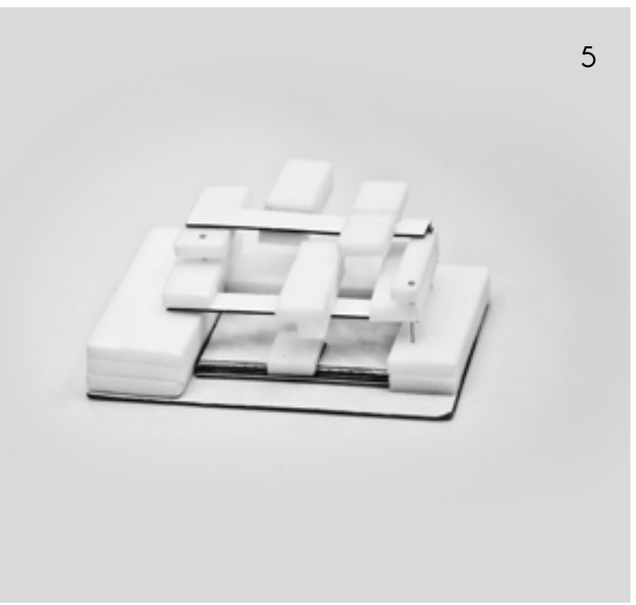
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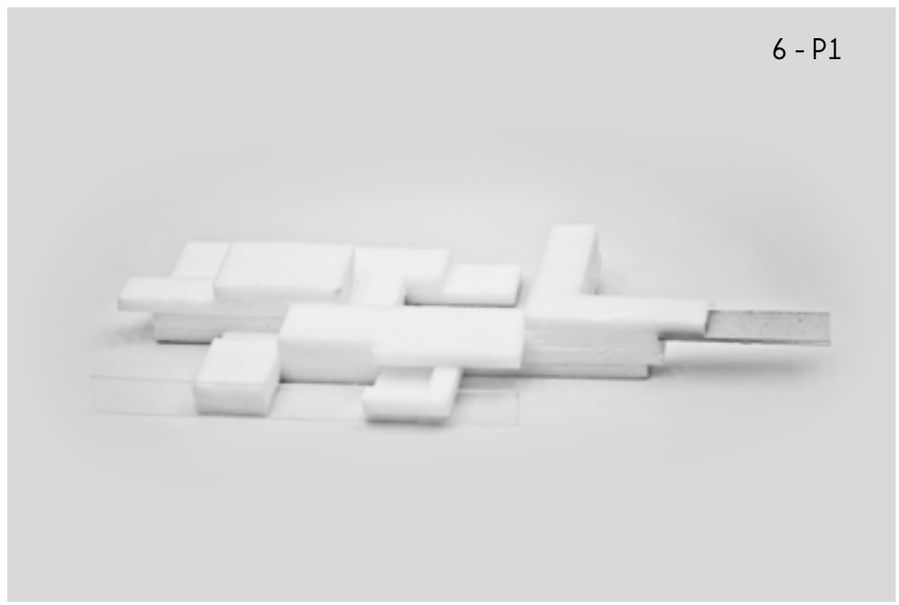
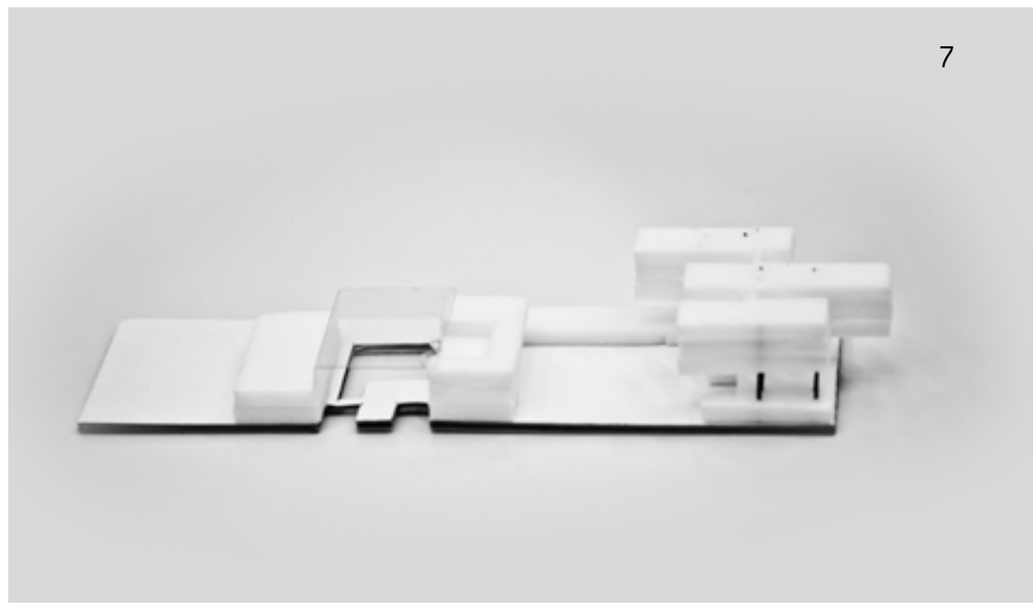
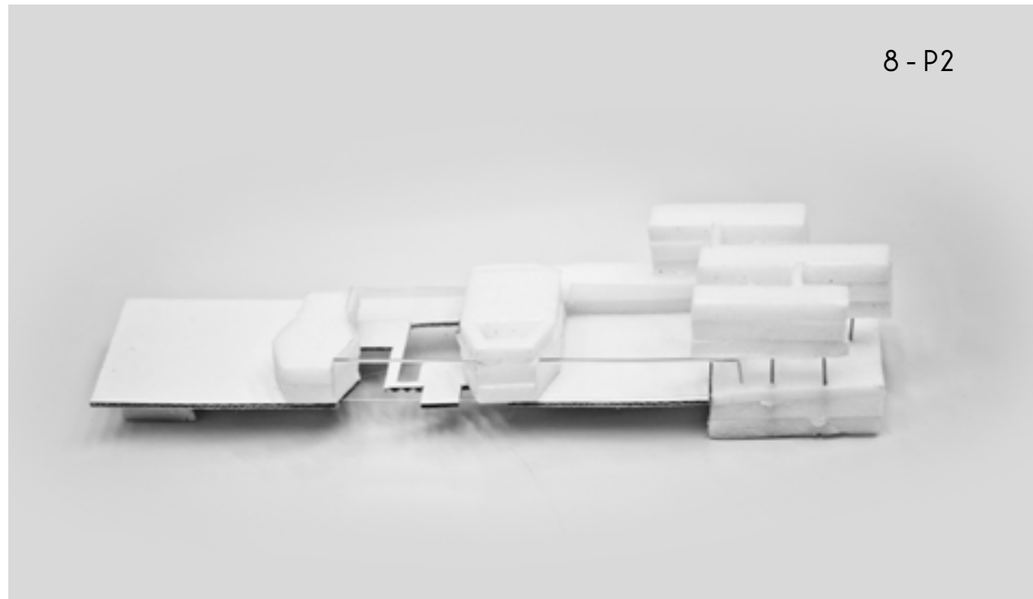

6 - P1


7

Massing study

Evolution of the form for the building design

Right from the begining, the concept for the form has been to play with difference in levels. The reason for that was to suit my theme of organising spaces around the greens. The first few models involved organizing the different functionsi in various levels. By P1, I had a form that had its specialities organized around a set of patios. Further refinement led to the parts of the waterfront change. Working drawings helped define the shapes of specific spaces.

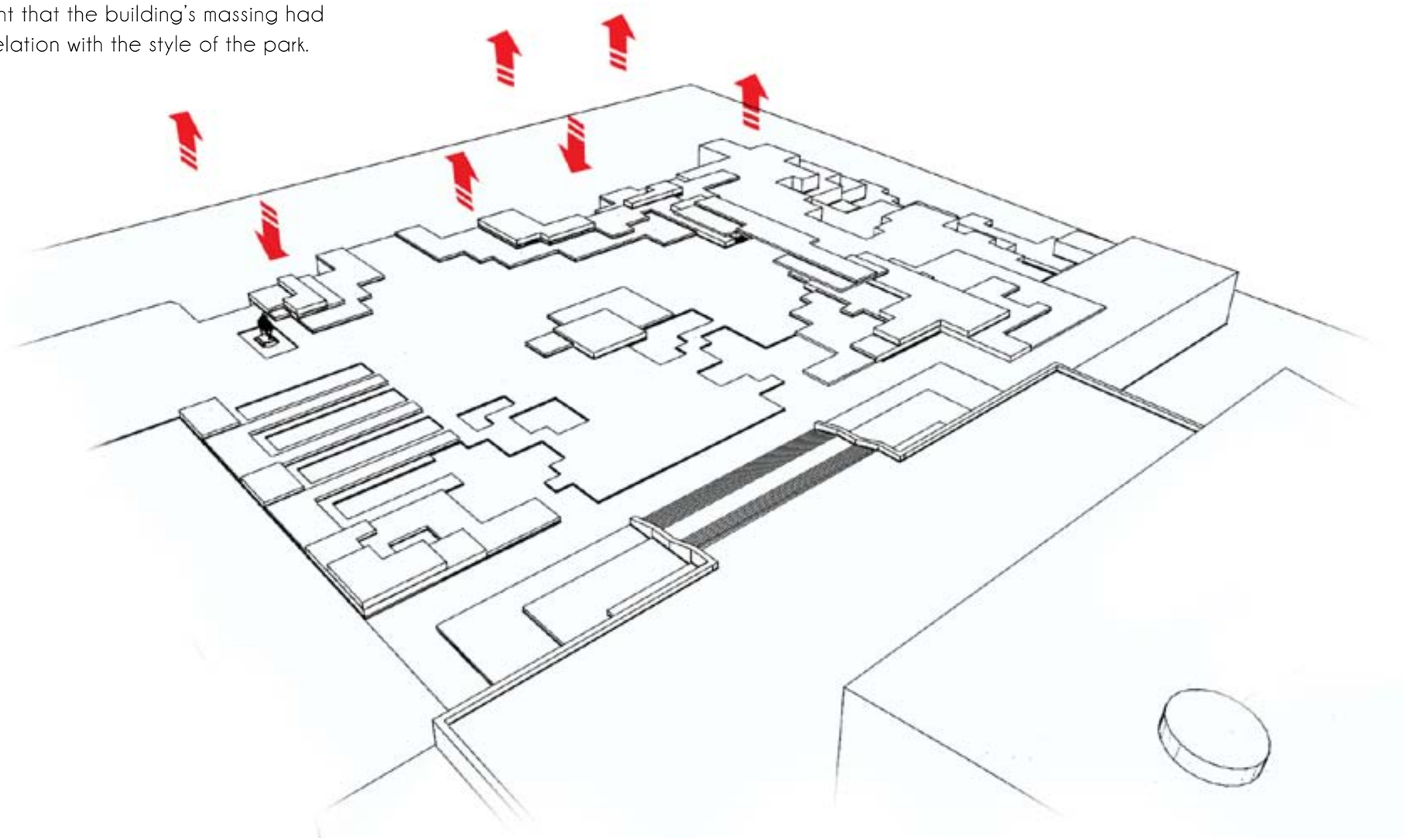

8 - P2

Massing development

Evolution of the form for the building design

01 The UN Park

The headquarters of Sustainability was going to form the façade of one whole side of the park. It was important that the building's massing had some sort of relation with the style of the park.

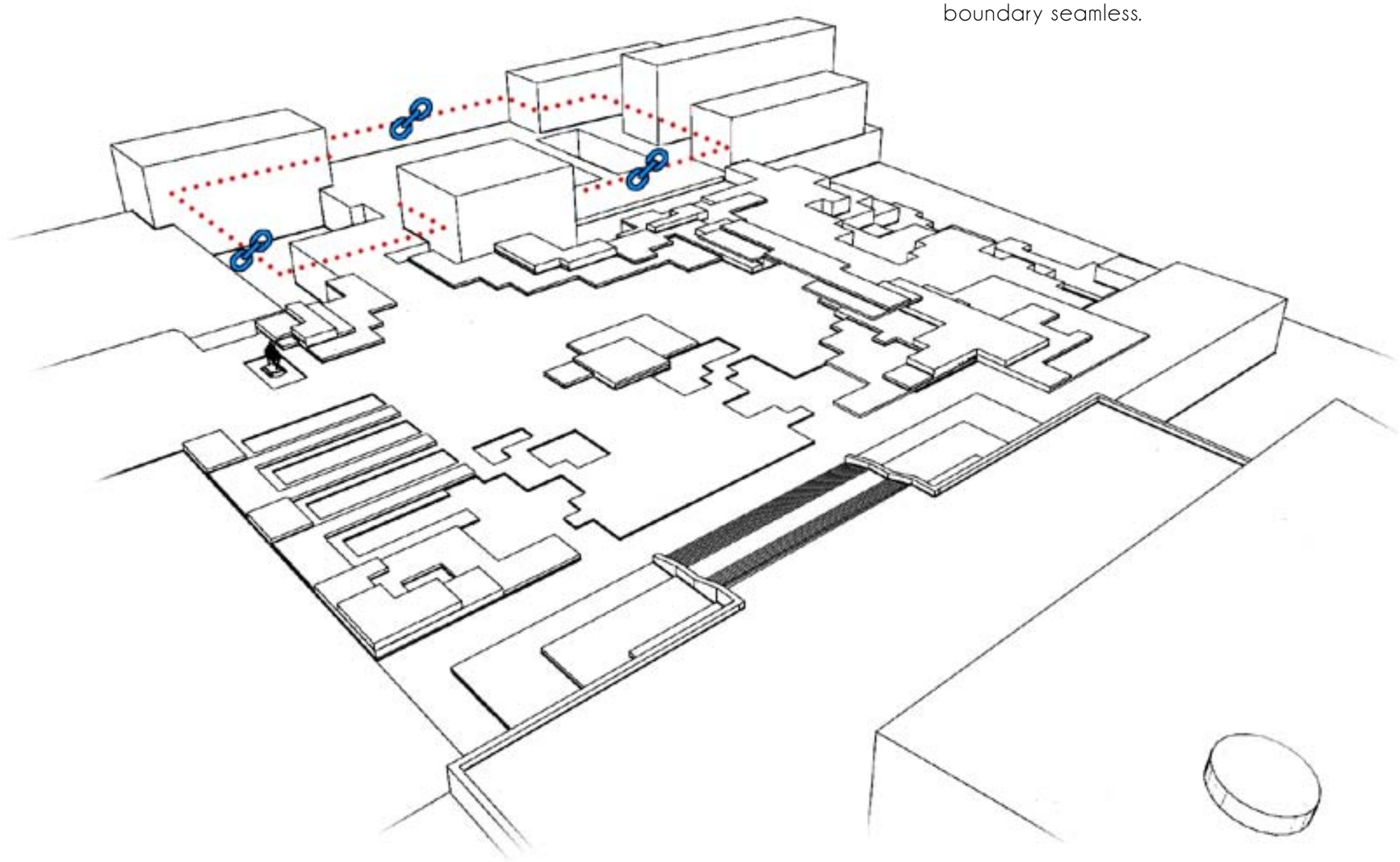


Massing development

Evolution of the form for the building design

02 Design continuity

Going along the undulating blocks concept, the building has blocks springing up from the ground at different points and heights. The experience of levels and unfolding spaces was also continued into the building so as to make the boundary seamless.

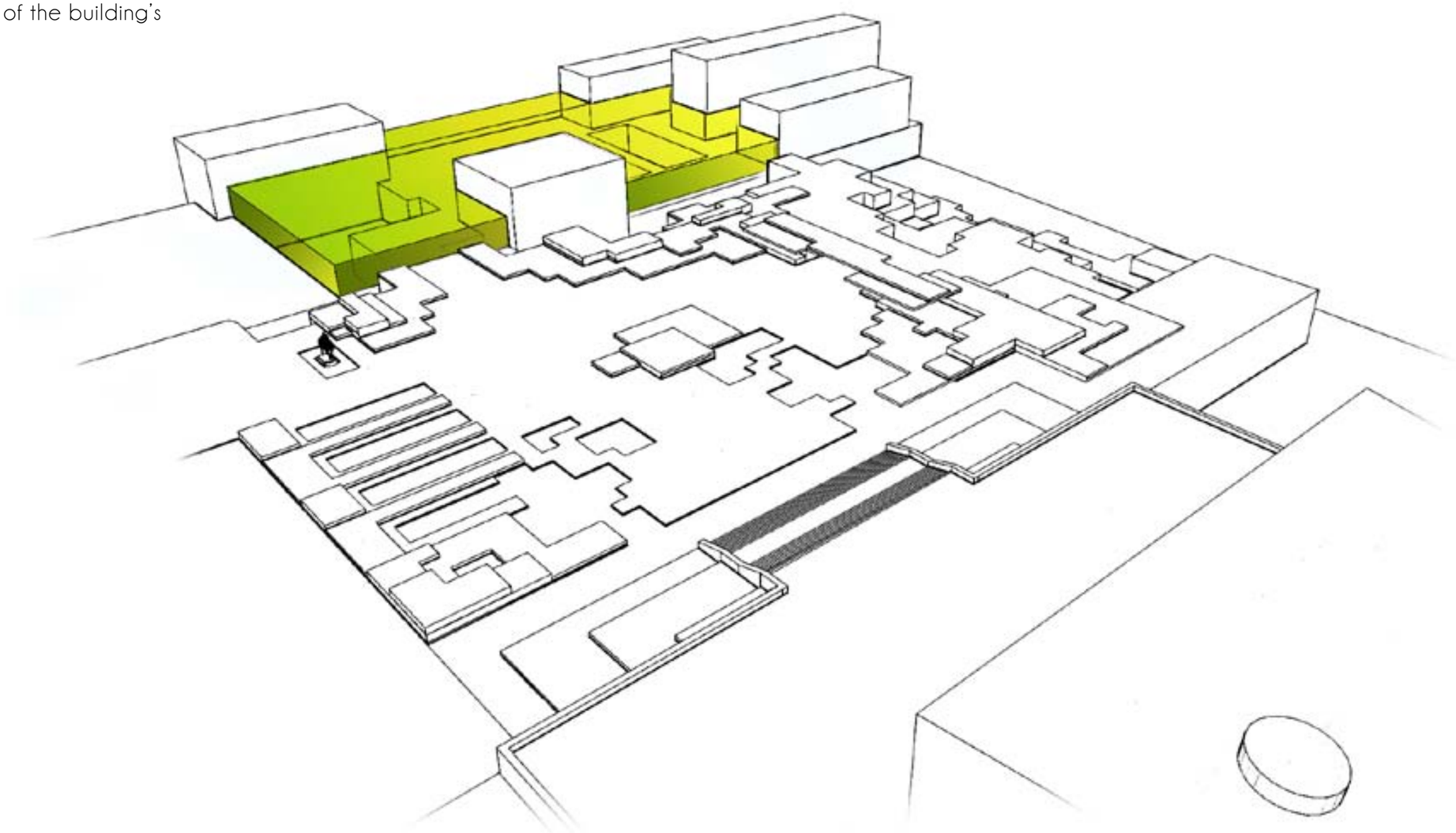


Massing development

Evolution of the form for the building design

03 Solids and Voids

The spaces in between the blocks had to be sheltered. Glass patios were introduced in contrast to the solid volumes. These patios would later go on to form the pillars of the building's energy concept.

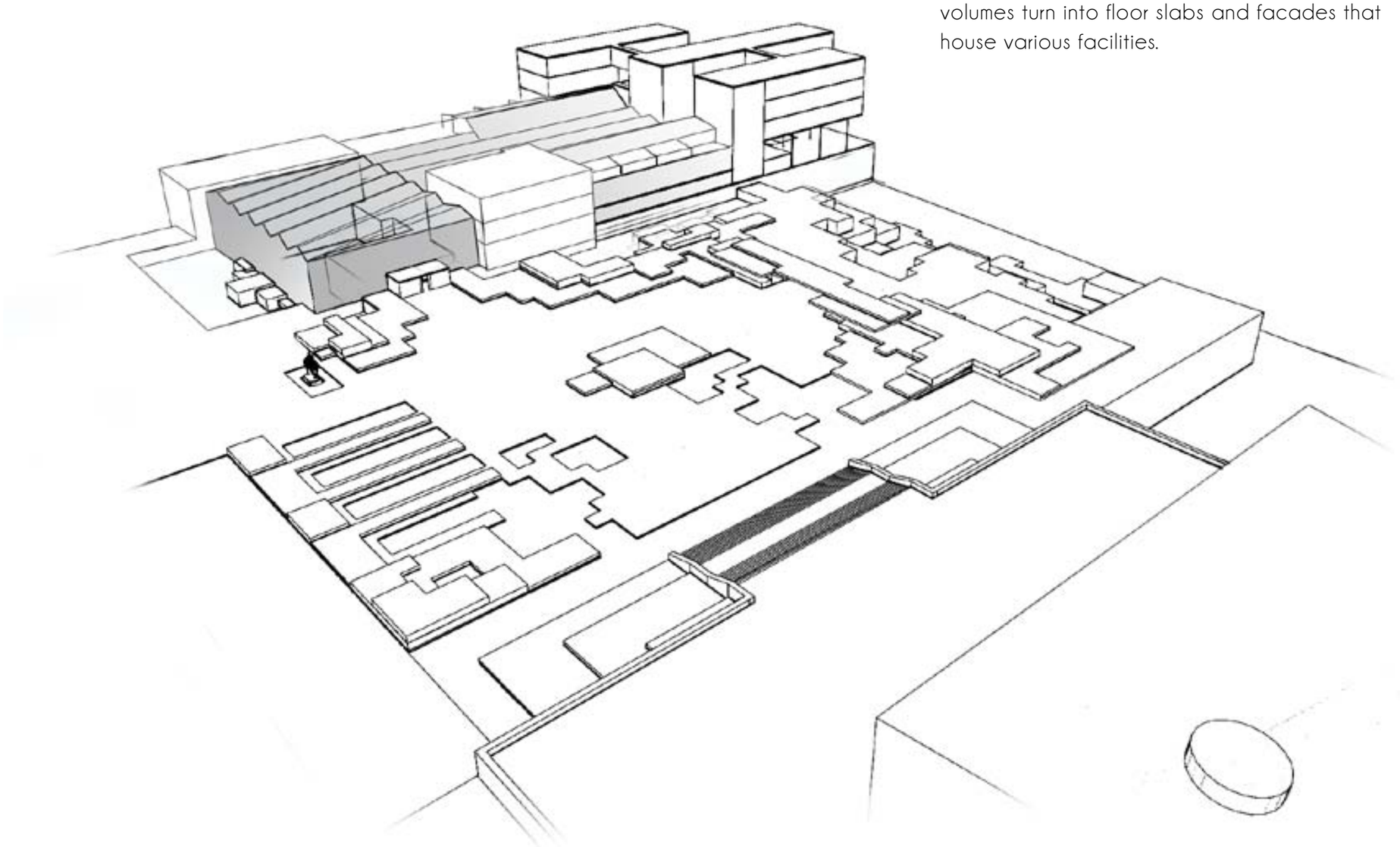


Massing development

Evolution of the form for the building design

04 Refining the volumes

The glass patios are developed further with regard to functioning, structural design, climate concepts and spatial experiences. The programs and functioning of the building is worked out and volumes turn into floor slabs and facades that house various facilities.

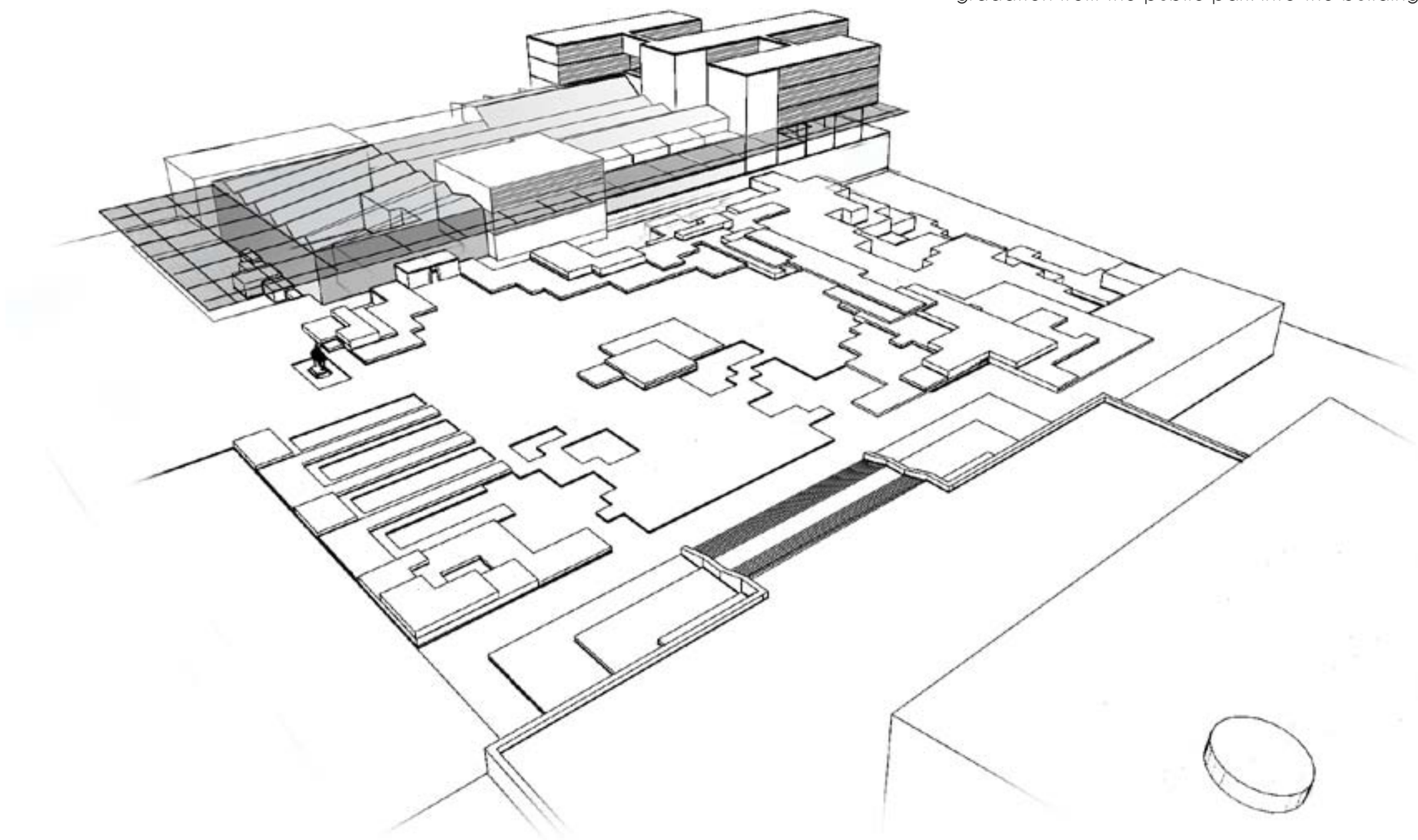


Massing development

Evolution of the form for the building design

05 The hearquarters of Sustainability

Finally the building is fine tuned, checked for integration as a whole. The semi open louvered space around the building provides a gradual gradation from the public park into the building.



- Values
- Concepts
- Alternatives
- Design

Image of the building

Making a statement

Key values - building

Design Precedents

1. Museum of Fantasy, Buchheim collection

The elevation portrays fluid transitions leading from one part to another.

2. Kanagawa Institute of Technology Workshop

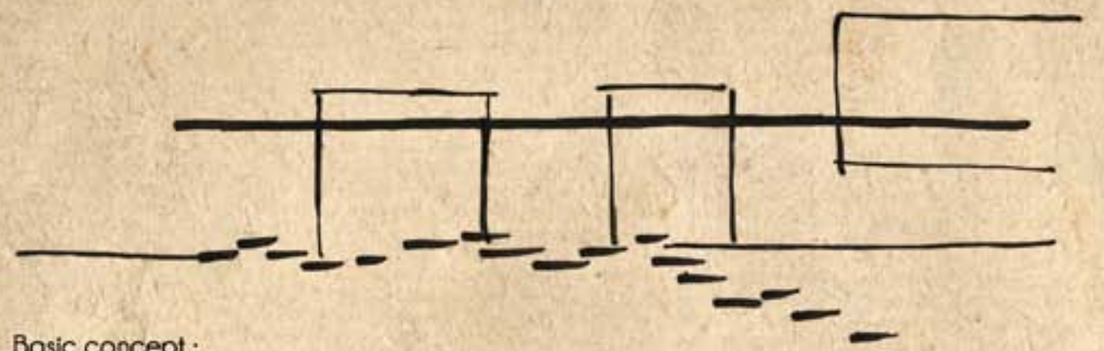
The building's sense of transparency is the closest one could get to creating a seamless boundary between the outside and the inside.

3. Grand Rapids Art Museum

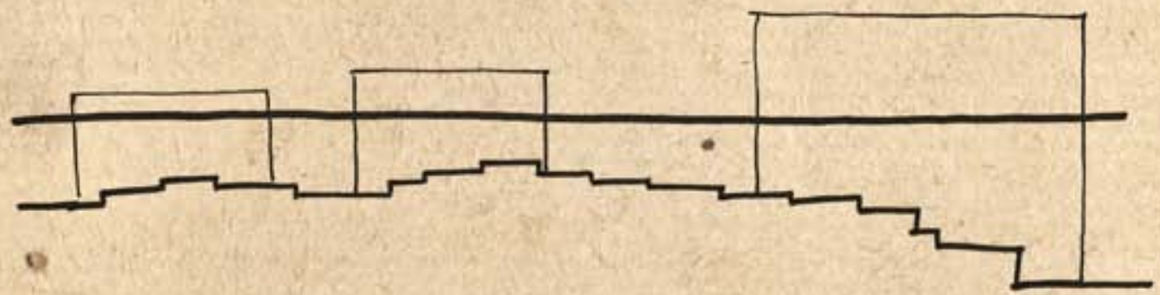
The use of concrete in the building is monumental in a civic sense, yet intimate and warm in experience.

The underlying building concept

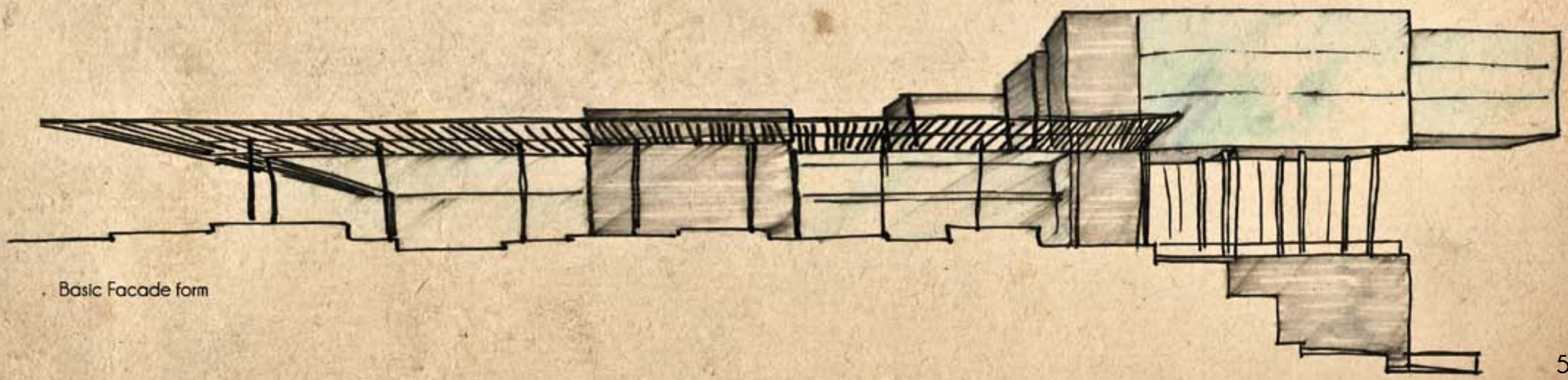
- undulating solids and voids



Basic concept :
Undulating landscape at human scale and the same rythm in building block scale



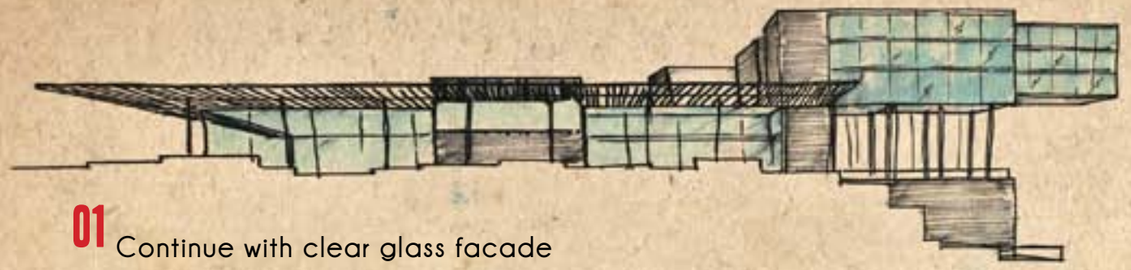
Design wise, a strong horizontal band dominates the facade, building blocks rise, spaced at intervals rise over this line.



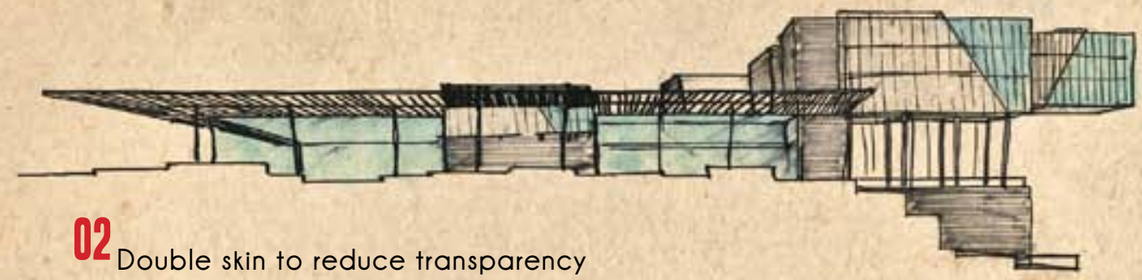
Basic Facade form

Alternatives for the building facade

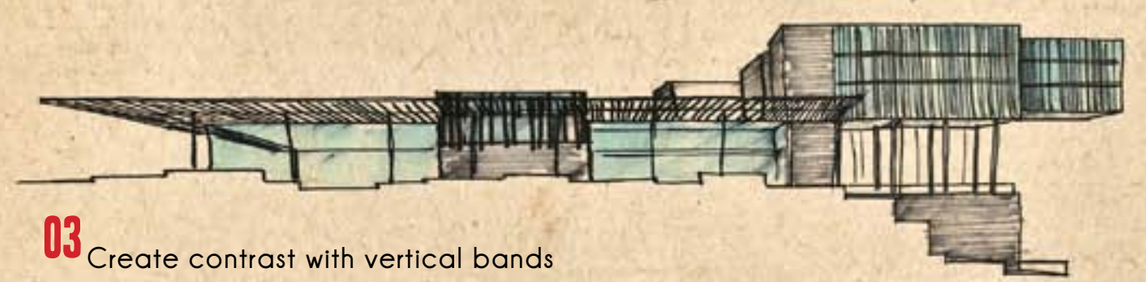
- UN Park elevation



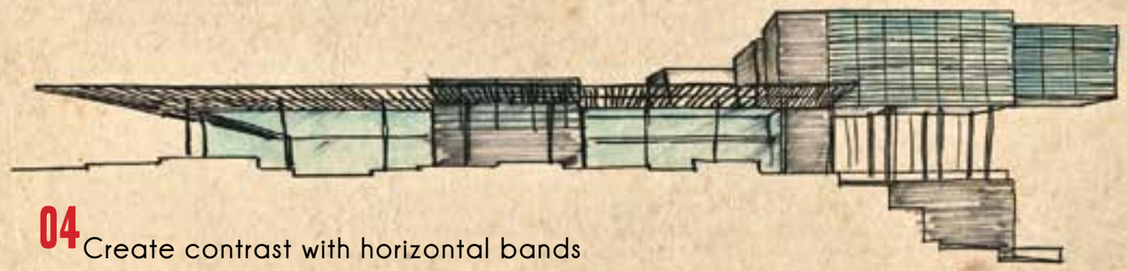
01 Continue with clear glass facade



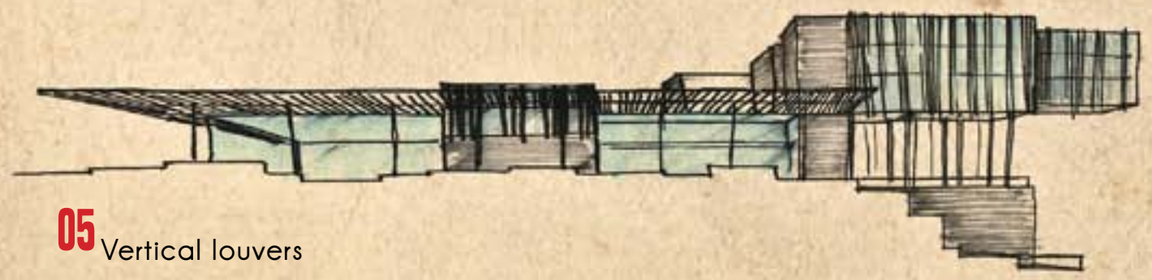
02 Double skin to reduce transparency



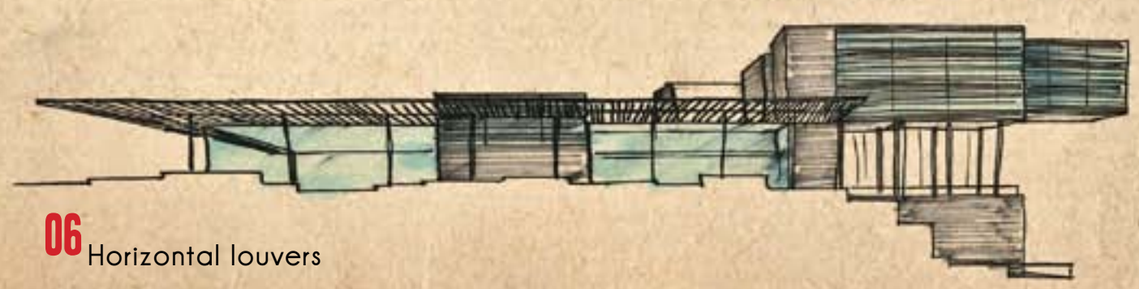
03 Create contrast with vertical bands



04 Create contrast with horizontal bands



05 Vertical louvers



06 Horizontal louvers

Using a black box approach, investigation of different styles of facades for different parts of the building were carried out. As my design process has been based on an inside-out approach, it was intuitively designed that auditoriums would form sold volumes while the patios would be the clear glass volumes.

To continue working on the lines of creating a sold and void image for the building, it was necessary to try alternatives that achieved lesser transparency in the office parts but still provide excellent working conditions for the interiors.

After careful analysis of the different types, the **design with horizontal louvers was chosen. Not only did it work well for climatic requirements (south facade), it also helped in emphasizing the horizontality of the structure.**

UN Park elevation

- South Facade

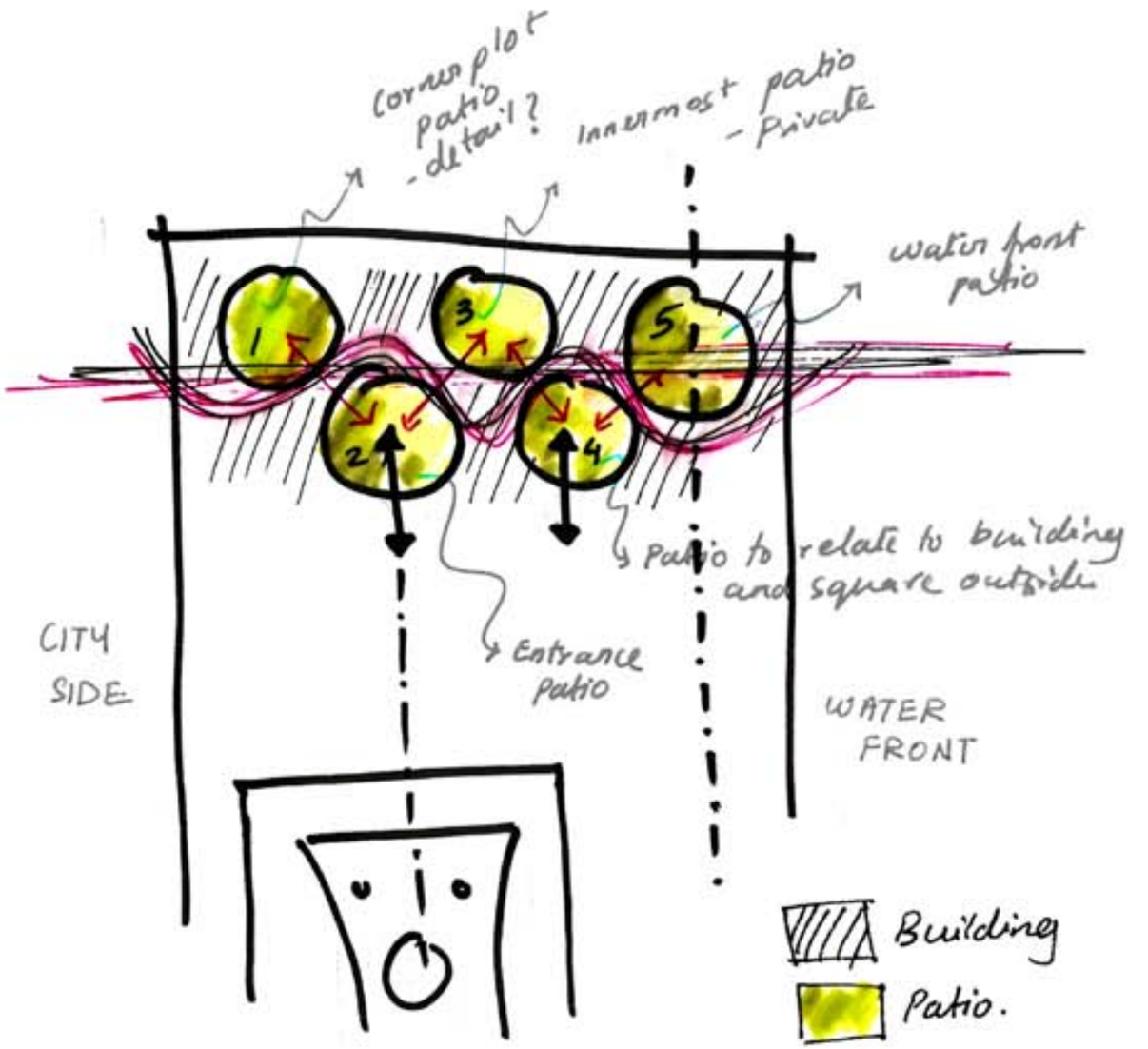
UN Waterfront elevation

- East Facade

- Analysis
- Concepts
- Plans
- Sections
- Circulation
- Structural Scheme
- Storyboard

Concept & Design

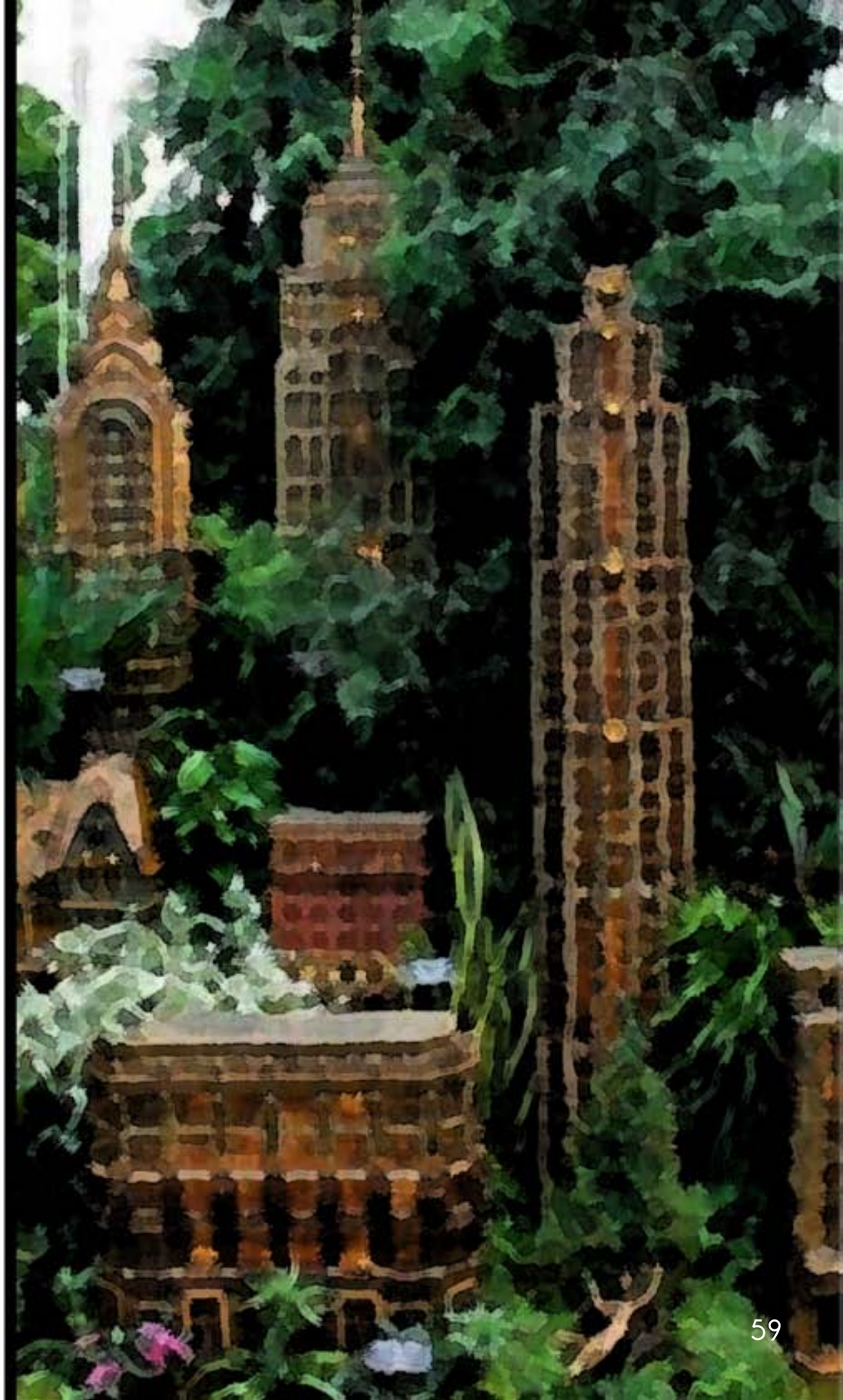
The building as a billboard for sustainability



Top - *Conceptual zoning of patios in the building. Functions are organised around these patios and each patio has a specific purpose of its own.*
Right - *An artist's portrayal of New York in a jungle*

A museum of lush green patios

The concept of the building is to try to incorporate **an office into a lush green space** that would not only help in **improving the quality of the working environment** but also the presence of the patios would ultimately work towards the **sustainability** of the complex. The theme is to make every user travel through patios that are filled with water and greenery to reach a certain function unit. It would be exemplary of rejuvenating ecology of the building and maintaining a close relationship with nature.



Program analysis

One of the most important goals of the project is to cater the building to different genres of users and yet ensure security.

Zoning

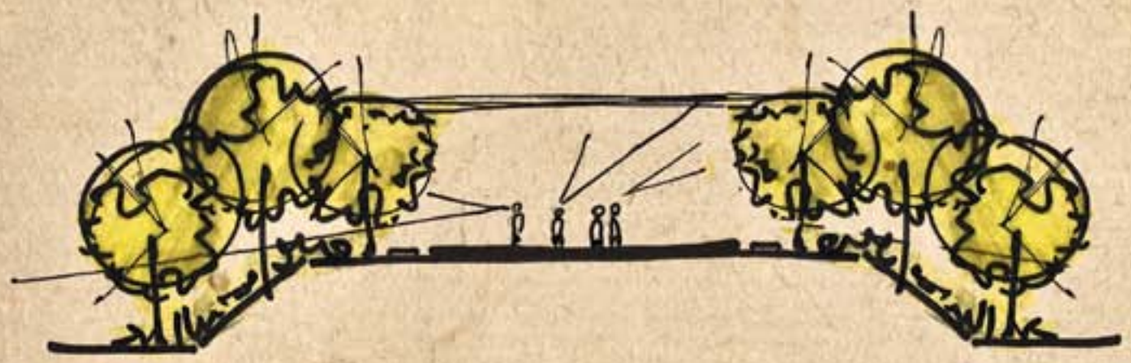
Organizing the programs around the green patios.

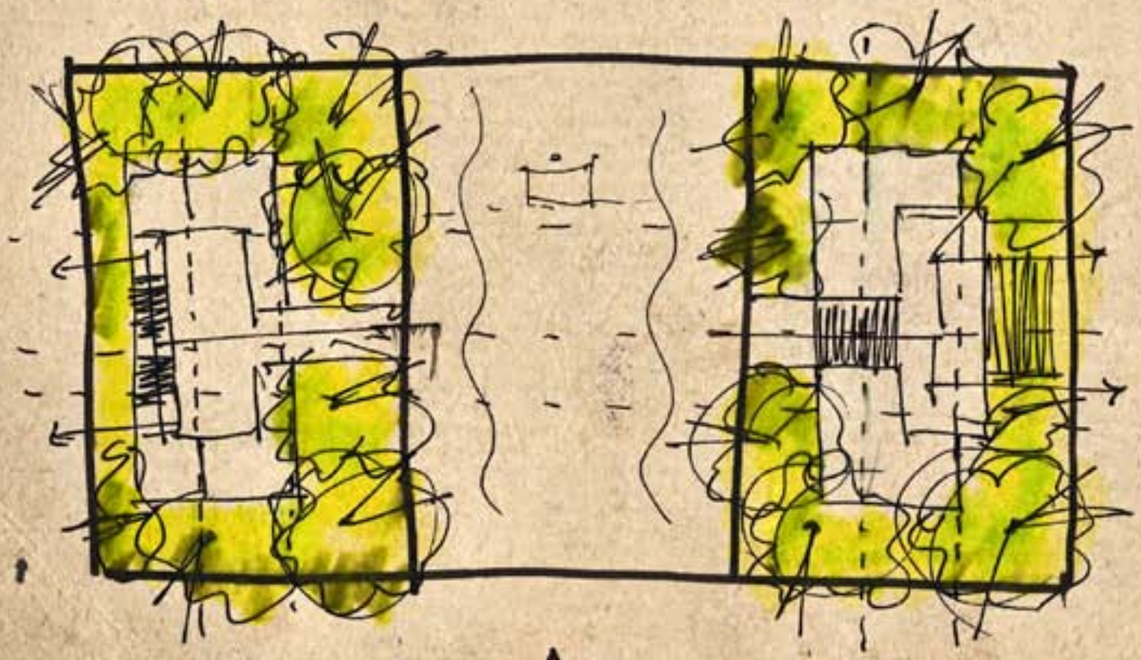
1. The Entrance Patio
2. Center Court
3. The Waterfront

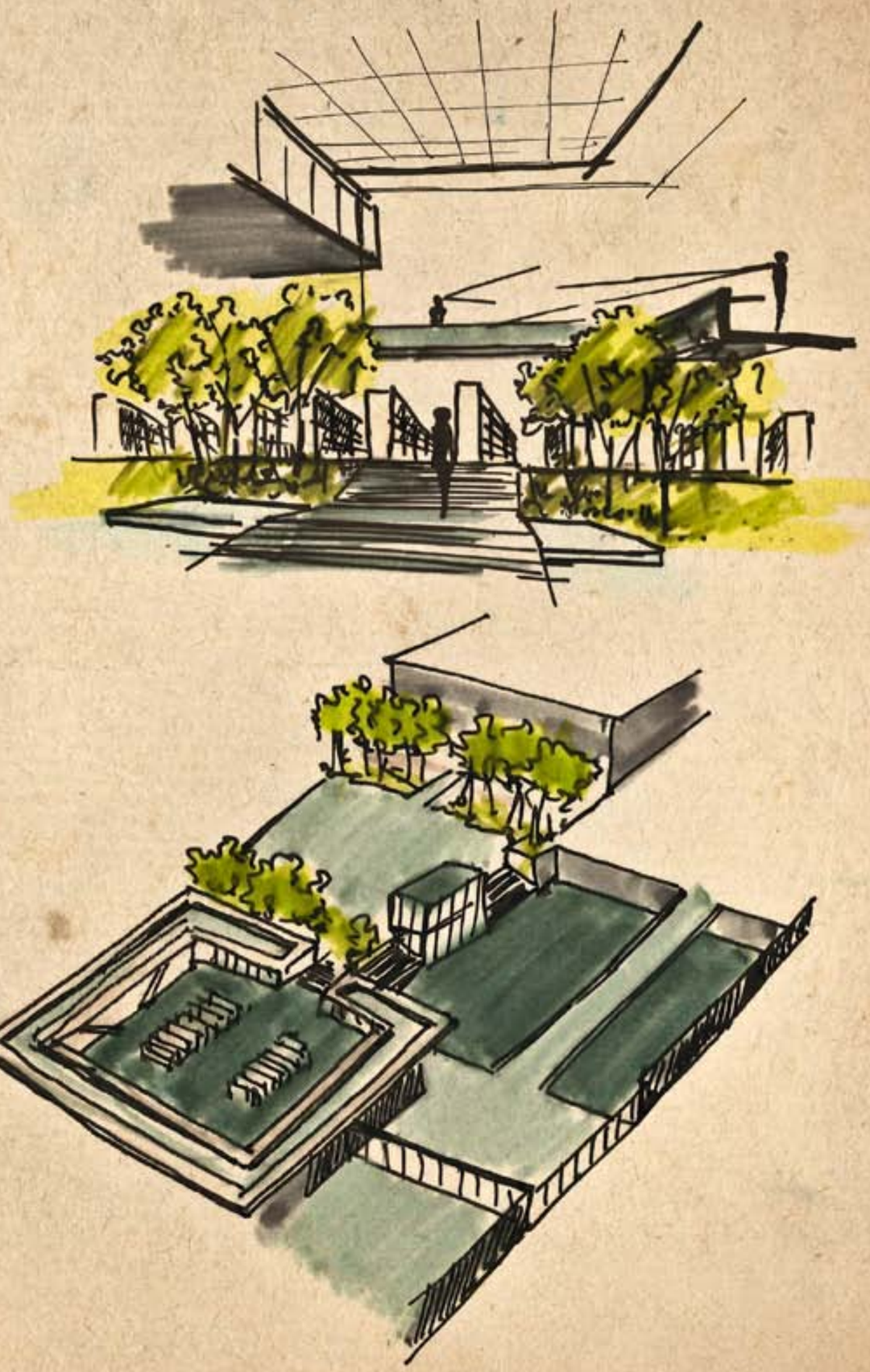
01 Entrance Patio

First impression. An experience to show what it would be to work in a close relationship with nature.

The entrance patio will give the user or visitor his/her first impression of the Environmental Council and what it stands for.. The space is filled with greenary, creating a fresh environment and pathways in the form of bridges and stairs that lead to different functions like the library or auditoriums through these dense jungle like spaces.







02 Center Court

Get immersed in the world of green in your daily arrival at work

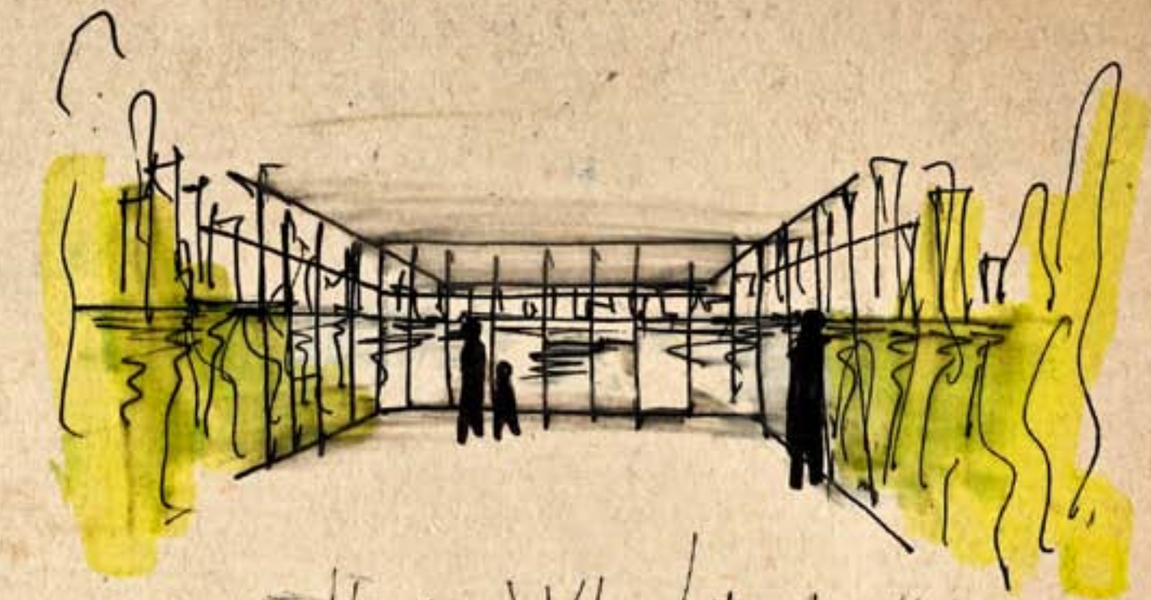
The centre court is the link between the public and the private part of the building. All employees, diplomats and other users will have to use this lush green garden to reach their offices. It is an inspiration from the Institute of Forest and Nature by Behnisch and partners. The center court can also serve to purify the air and also heat it during winters and thus help in making the building more sustainable.

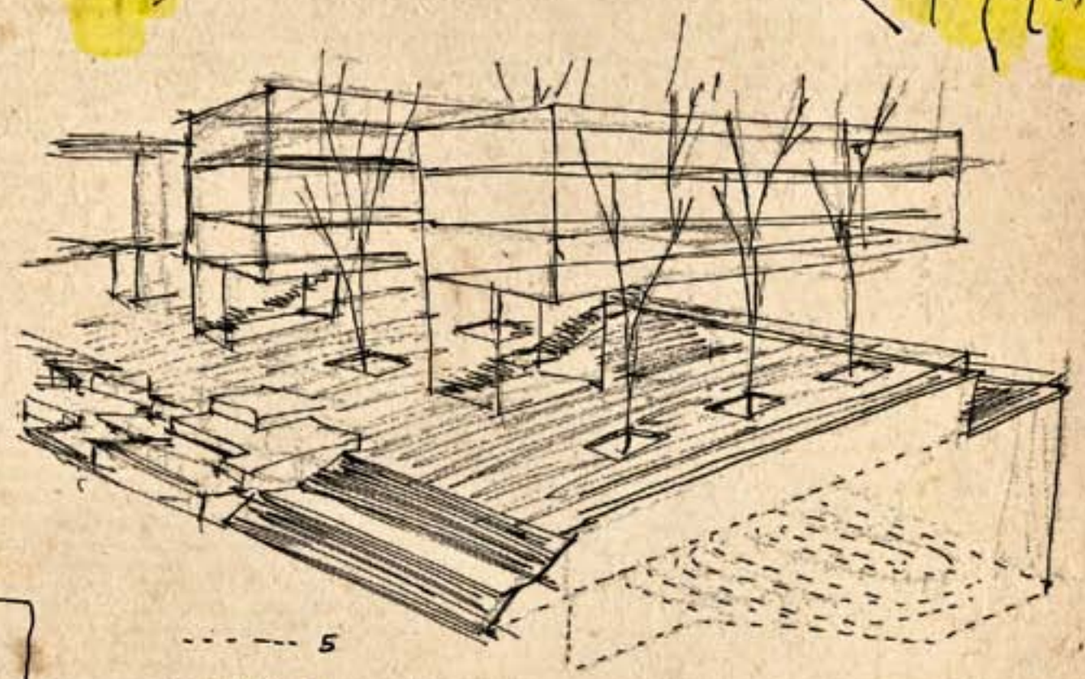
Below - *Photographs of the Institute of Forest and Nature by Behnisch and Partners*

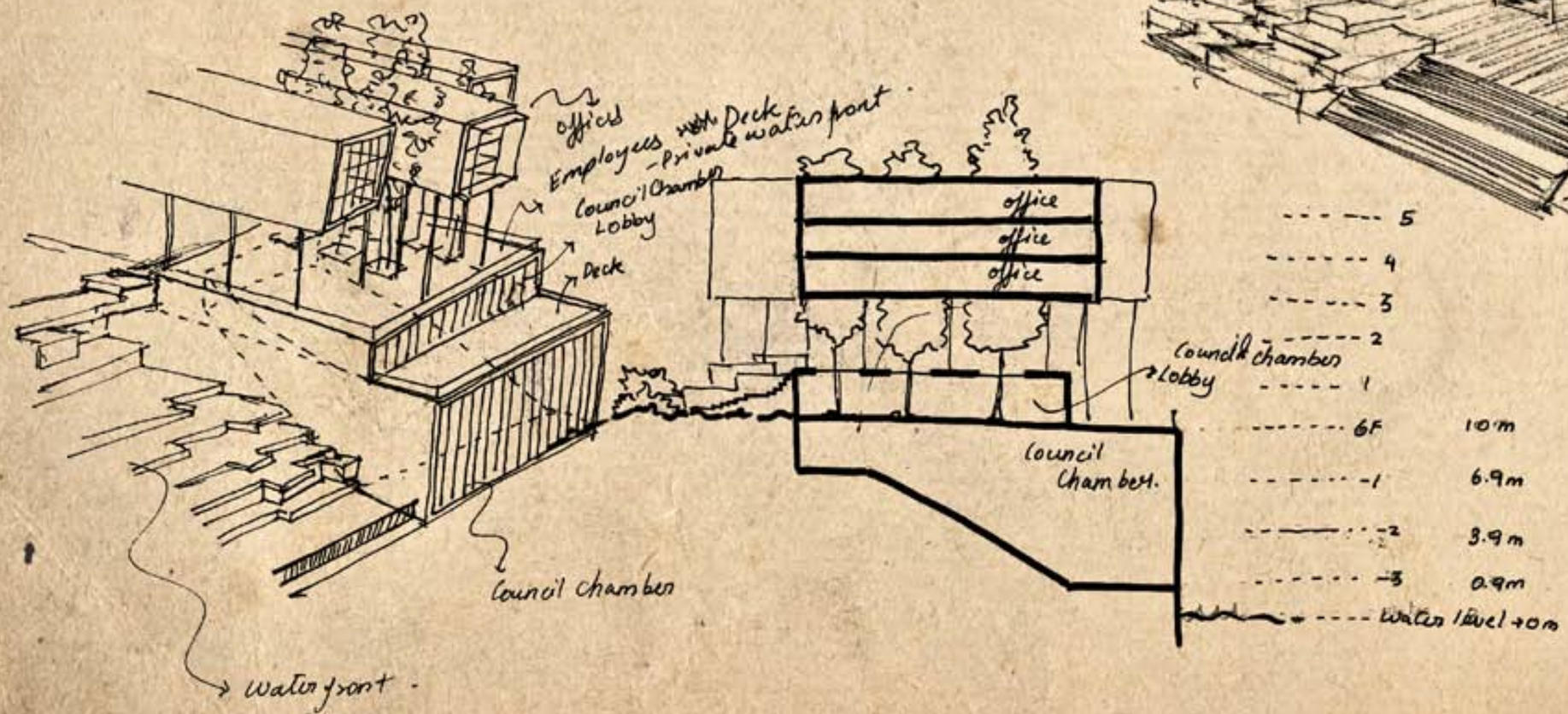
03 Waterfront Patio

Employee's relaxation point.

The waterfront patio is only for the employee's and delegates of the United Nations. This private waterfront deck would be a place where the users of the building will be able to take time off and relax.







Auditorium (450 seats)

Cafeteria

Center Court

Office Lobby

Entrance Patio

Workshops

Water front Patio

Entrance

Circulation

Office Spaces

Common Facilities

Vertical Circulation

Services

N

Ground floor PLAN

Public | Private

Public | Private

Auditorium (450 seats)

Cafeteria

Center Court

Office Lobby

Entrance Patio

Workshops

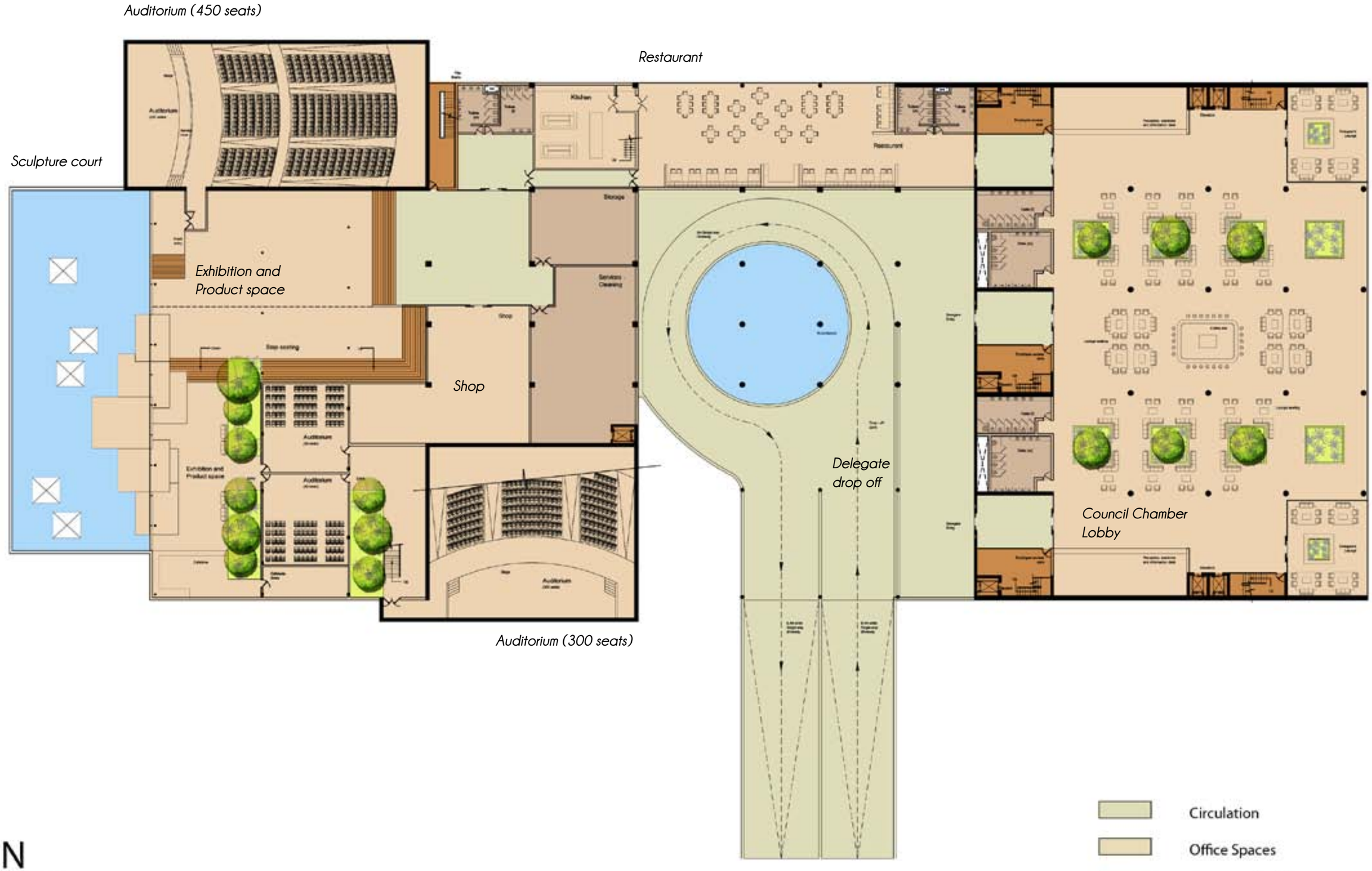
Water front Patio

Entrance

N

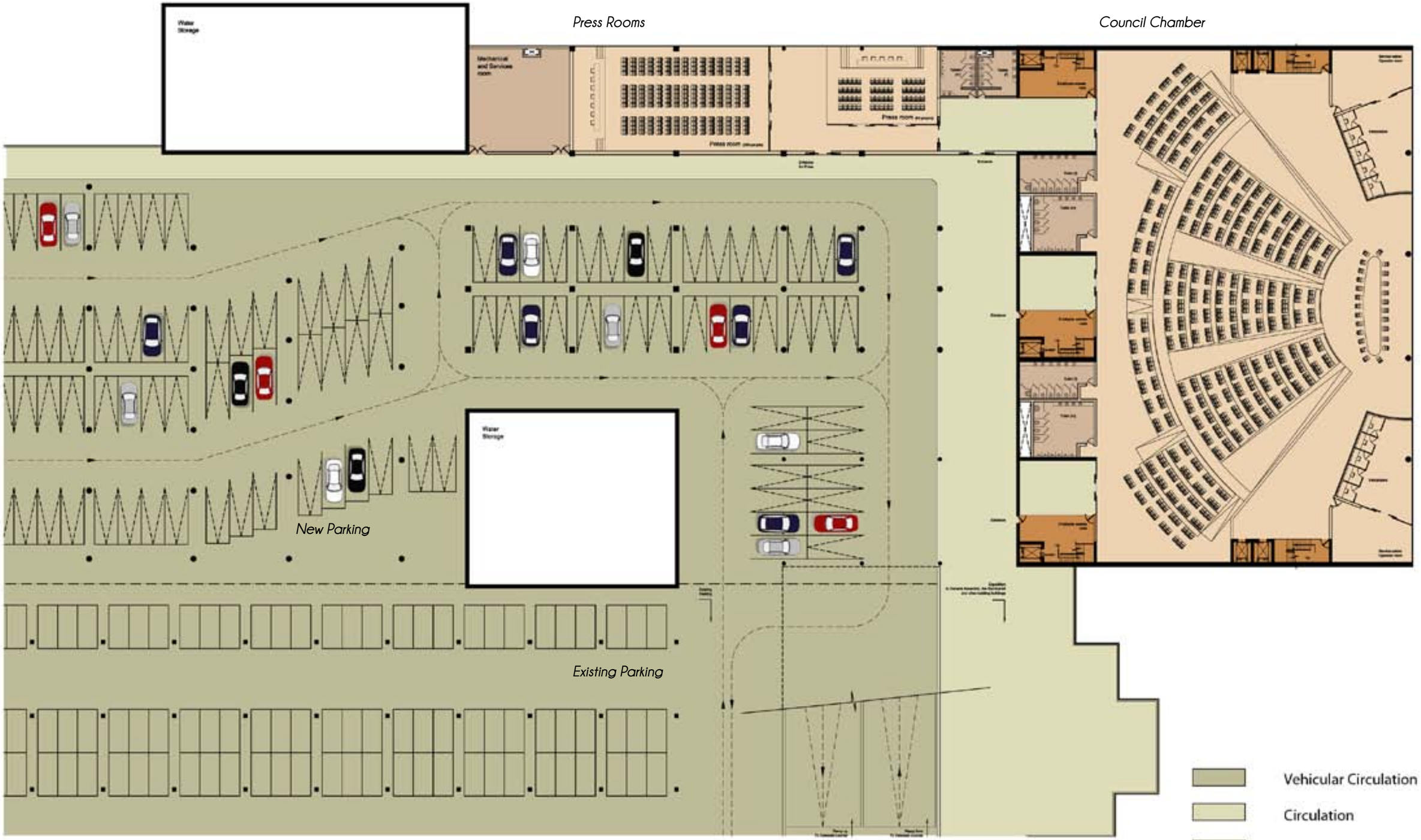
Ground floor PLAN

- Circulation
- Office Spaces
- Common Facilities
- Vertical Circulation
- Services



N

1st Basement PLAN



N

2nd Basement PLAN

N

1st Floor PLAN


Extended Offices
Connecting bridge
Extended Offices

N

2nd Floor PLAN

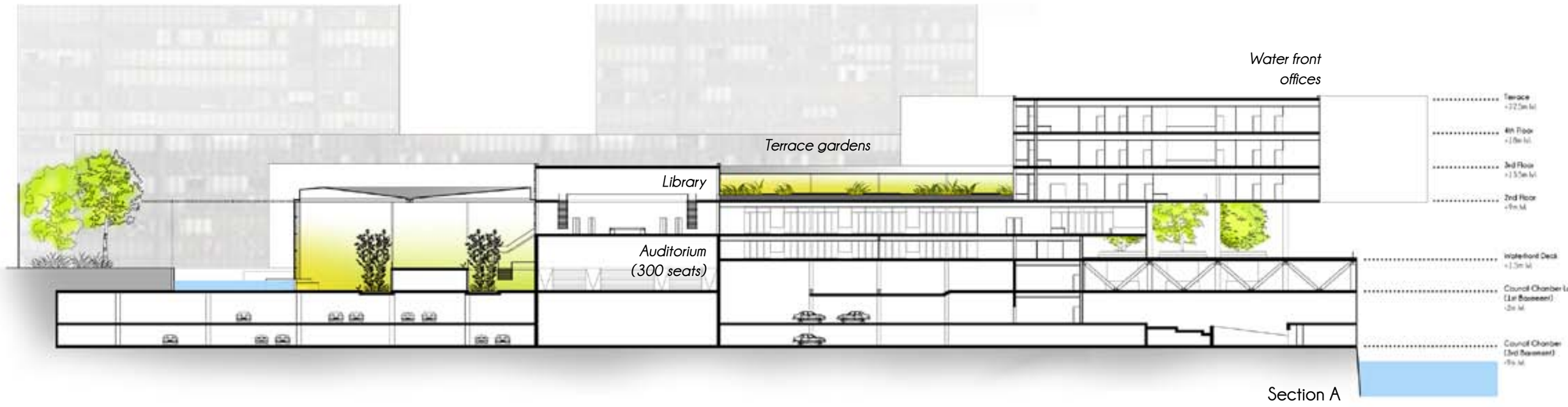
- Circulation
- Office Spaces
- Common Facilities
- Vertical Circulation
- Services

N

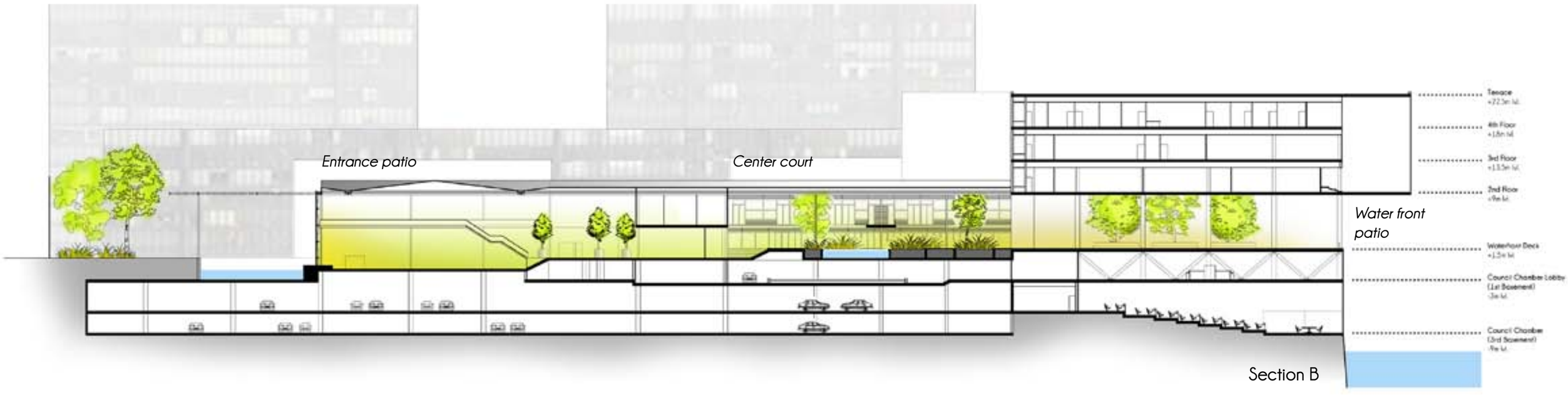
3rd and 4th Floor PLANS

- Circulation
- Office Spaces
- Common Facilities
- Vertical Circulation
- Services

Longitudinal Sections

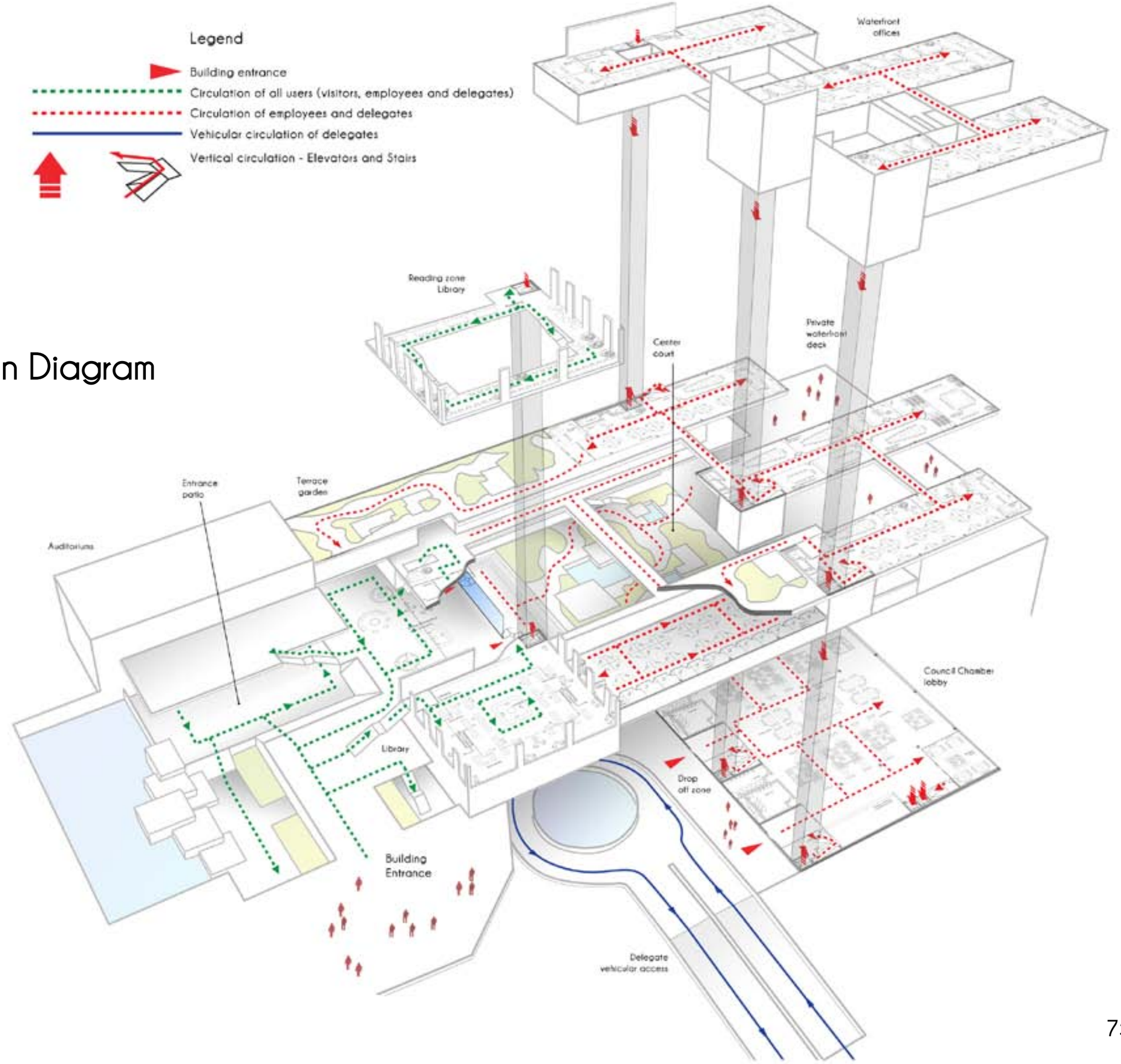


Section A



Section B

Circulation Diagram



Expansion Joints

Expansion Joints

Structural Scheme

Patios *(Steel columns spanning trusses)*

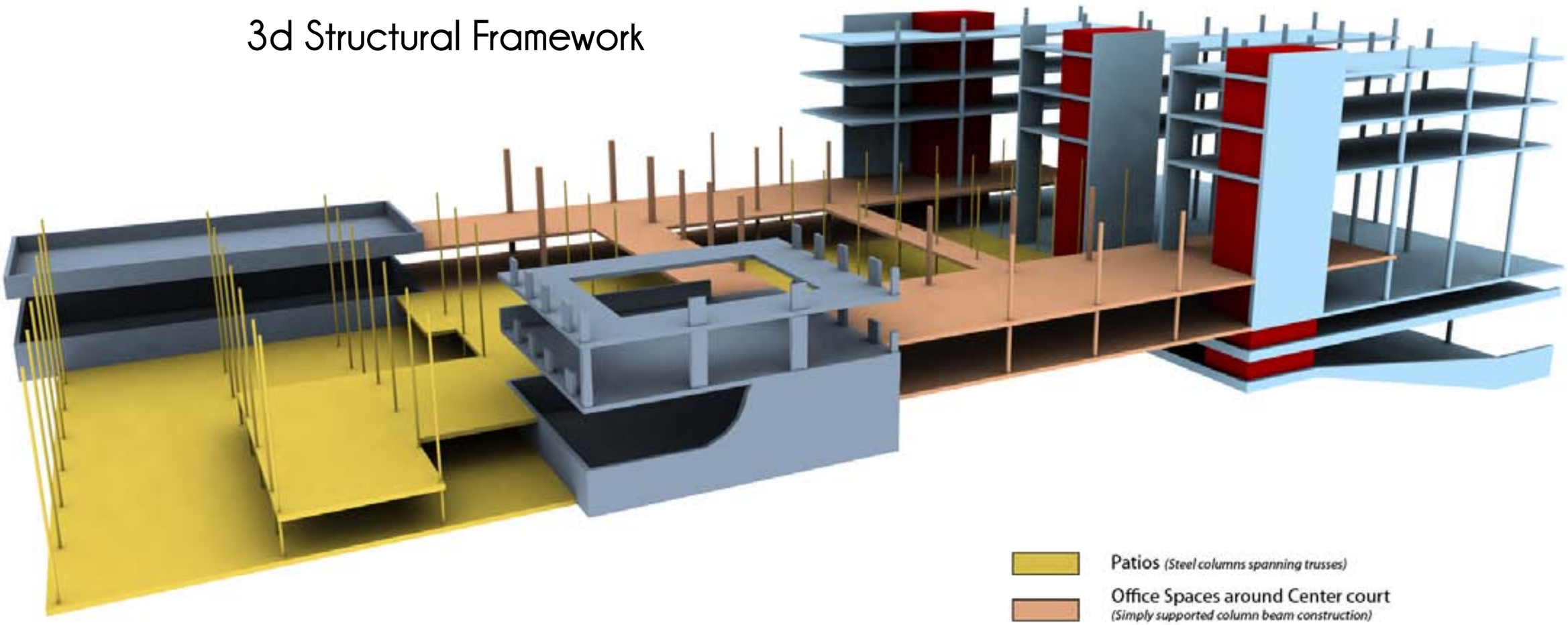
Office Spaces around Center court
(Simply supported column beam constructure)

Auditoriums and Library
(Shear wall structure)

Waterfront offices and Council Chamber
(Composite structure)

Cores

3d Structural Framework



Patios *(Steel columns spanning trusses)*

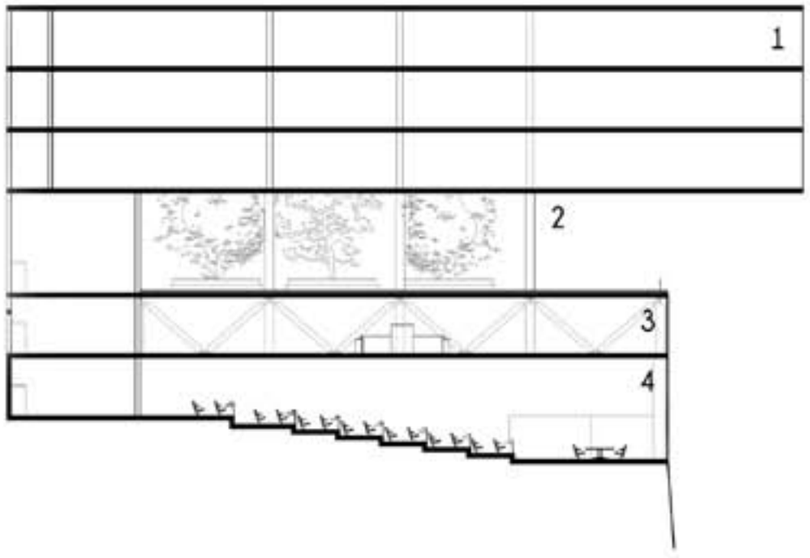
Office Spaces around Center court
(Simply supported column beam construction)

Auditoriums and Library
(Shear wall structure)

Waterfront offices and Council Chamber
(Composite structure)

Cores

Structural system
for the Waterfront Offices
and Council Chamber



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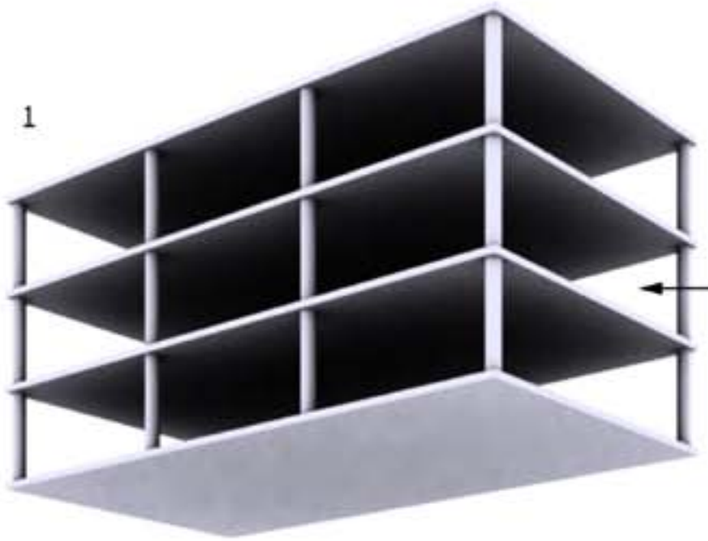
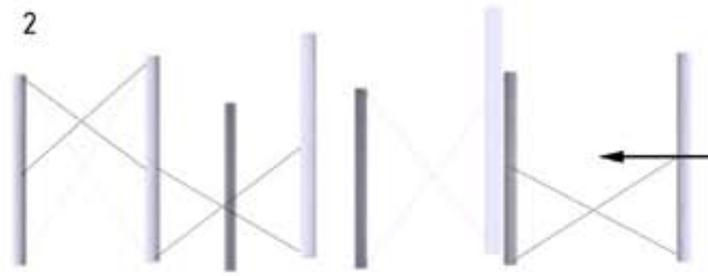


Offices

The office structure is a simply supported, column - beam structure

2



Waterfront Deck

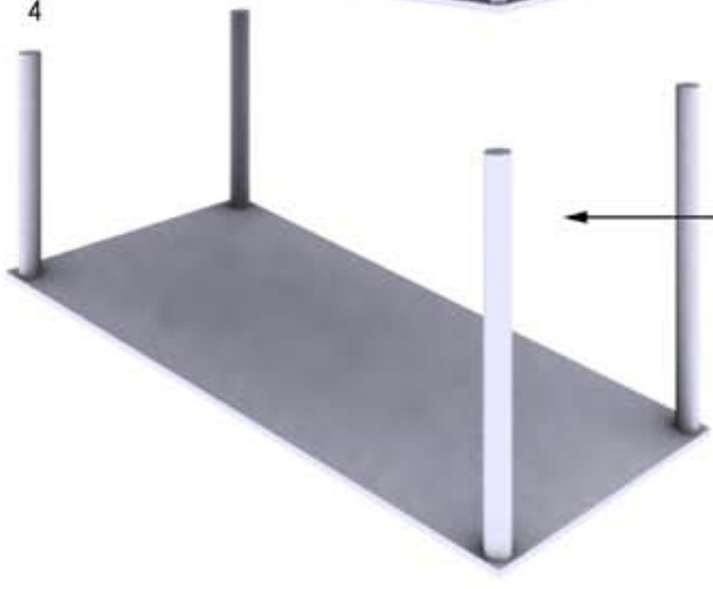
The 2 floor high open deck supports the offices above through slender columns that and braced by dignoal tension cables at places that require extra lateral support

3

Coucil Chamber Lobby

As the lobby is above the council chamber, it is necessary that the whole floor acts as the beam to avoid columns inside the chamber. At the same time, it is also necessary to transfer the load of the offices above to the foundation. For this purpose, the columns are converted into a truss structure

4



Council Chamber

A column free space, the end columns become thicker in dimension to transfer the load to the foundation

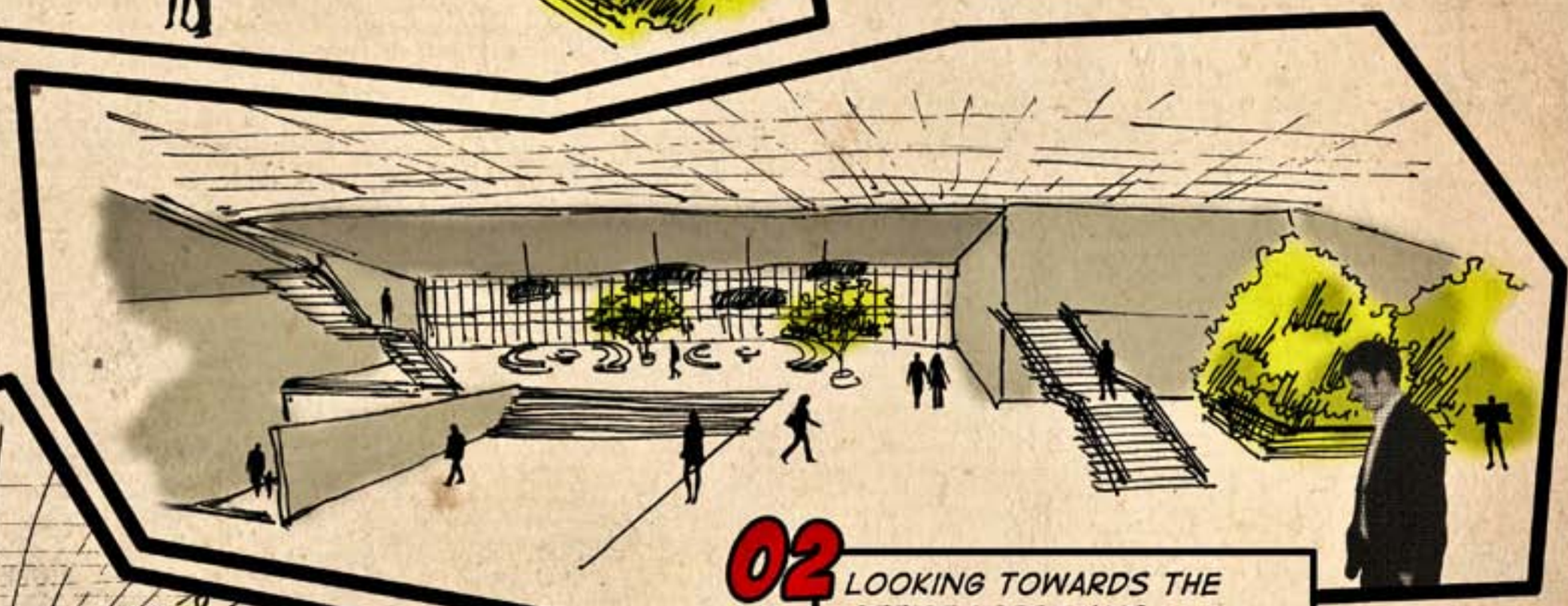
01 IMMEDIATE VIEW AFTER ENTERING BUILDING

Storyboard

Working out the spatial experience

"The even progress of travel is illuminated by a series of sudden contrasts and so an impact is made on the eye, bringing the plan to life."

- Gordon Cullen, Concise Townscape



02 LOOKING TOWARDS THE OFFICE LOBBY ANS STEPS FOR THE EXHIBITION AND PRODUCT SPACE

03 VIEW FROM THE EXHIBITION AND PRODUCT SPACE

Storyboard

Working out the spatial experience

04 FIRST IMPRESSION OF THE ENTRANCE COURT

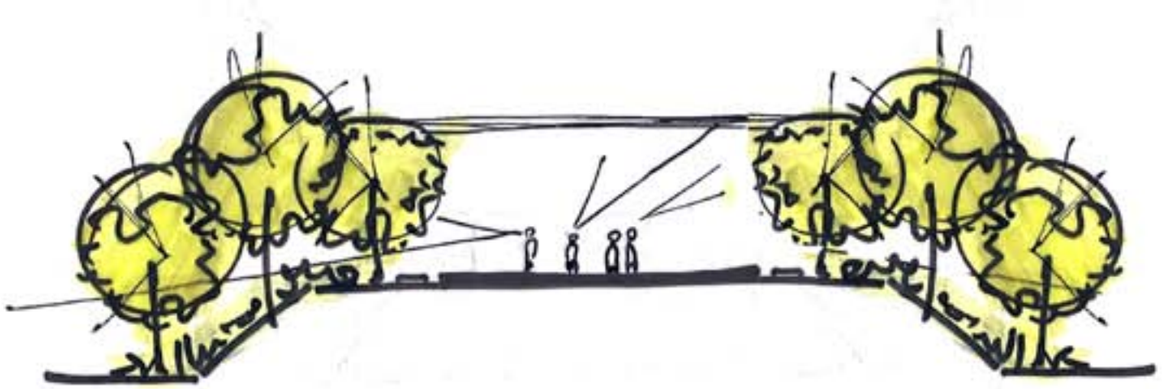
05 LOOKING TOWARDS THE WATERFRONT AND THE SEMI ENCLOSED RECREATION SPACE

06 VIEW OF BROOKLYN FROM THE WATERFRONT UNDER THE OFFICES ABOVE

- Goals
- Research and Design
- Detail
- Visualizations

Patio designs

the pillars of the building's sustainability concept

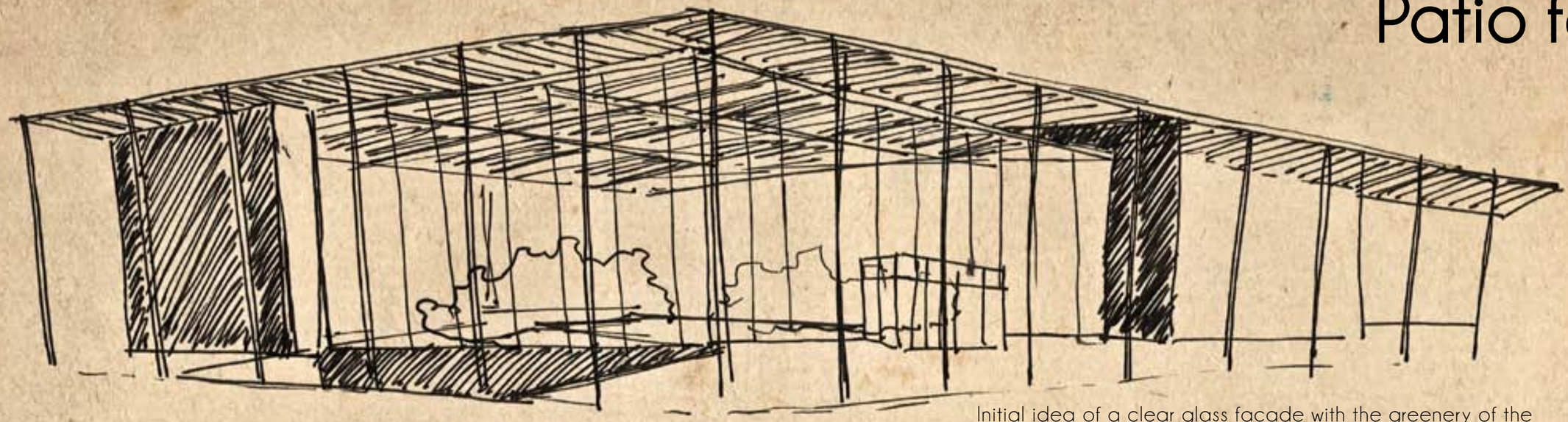


01 Entrance Patio

First impression. An experience to show what it would be to work in a close relationship with nature.

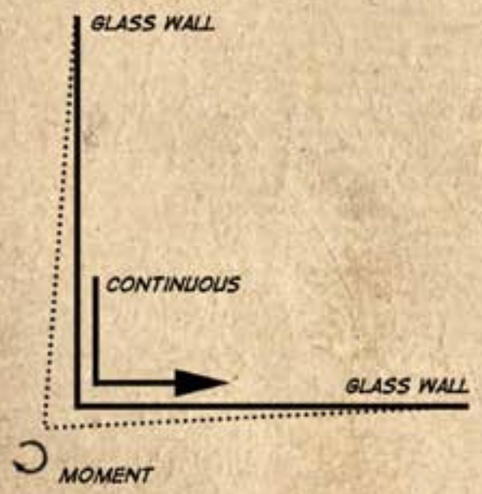
- Create an experience similar to that of a museum; sophistication and simplicity are the norm.
- The space would predominantly be used as a transit zone and occasionally for purposes of exhibition and product display.
- Integrate with the UN Park outside by continuing to use **spatial experiences through multiple levels.**

Patio facade



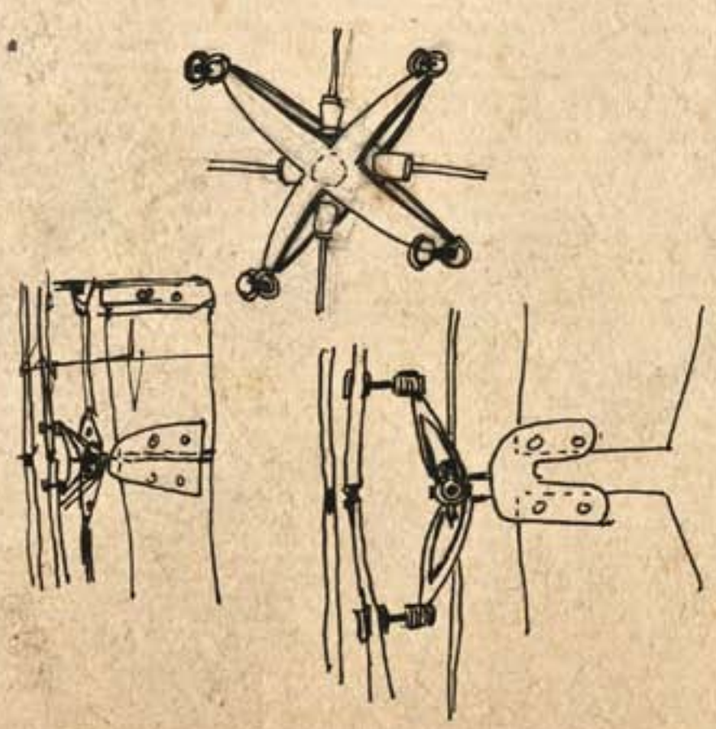
Initial idea of a clear glass facade with the greenery of the patios seen from outside

01 *ANALYZING THE SITUATION*

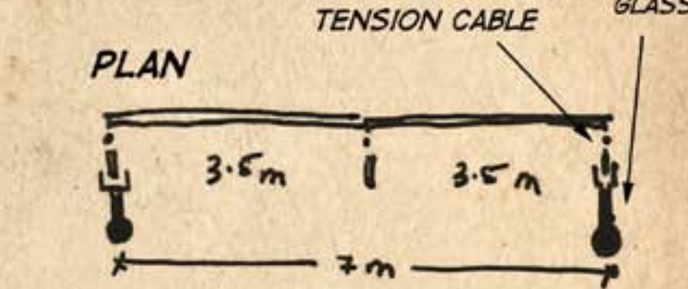


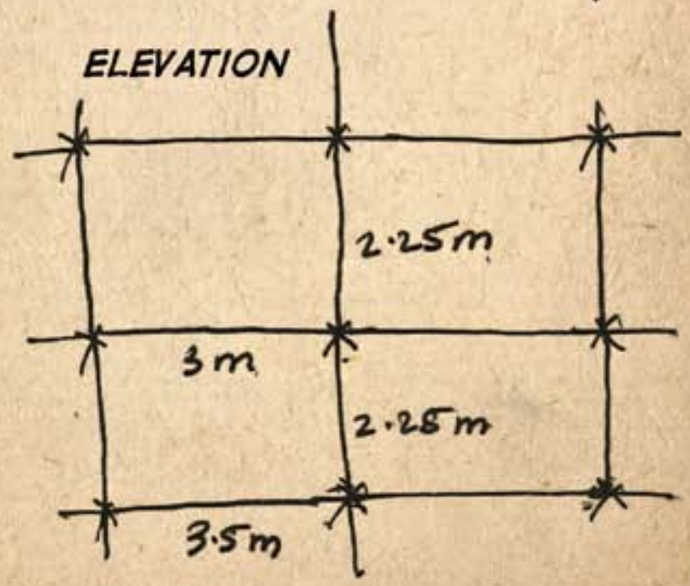
02 *BECAUSE A COMPLETE GLASS FACADE WITHOUT MULLIONS WAS CHOSEN, THERE WOULD BE MOMENTS AT THE CORNERS. SO BOTH HORIZONTAL AND VERTICAL SUPPORTS HAVE TO BE INTRODUCED TO COUNTER THESE MOMENTS*

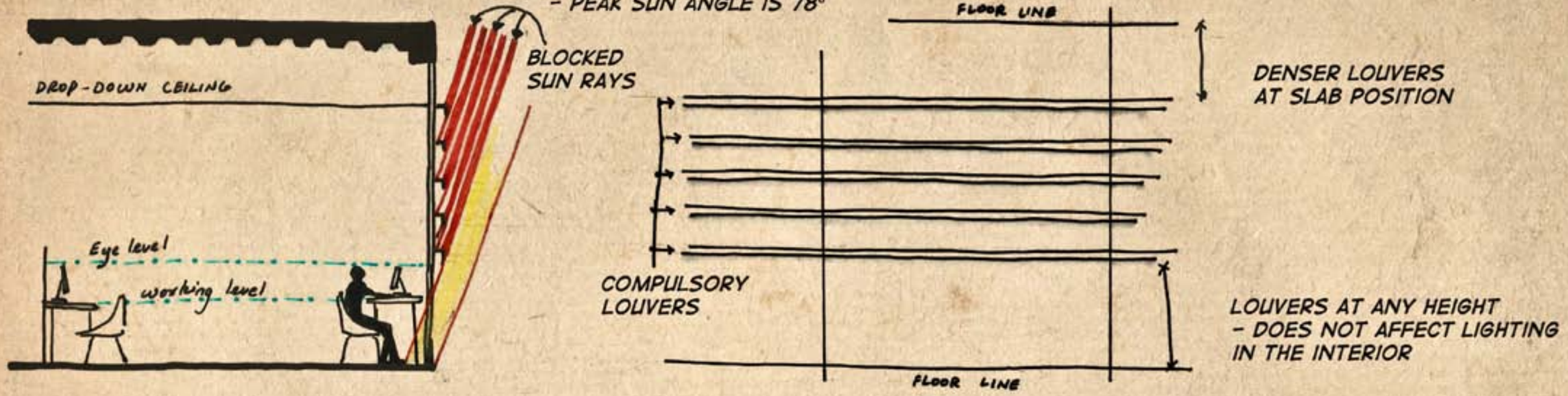
Original detail from Oxydal



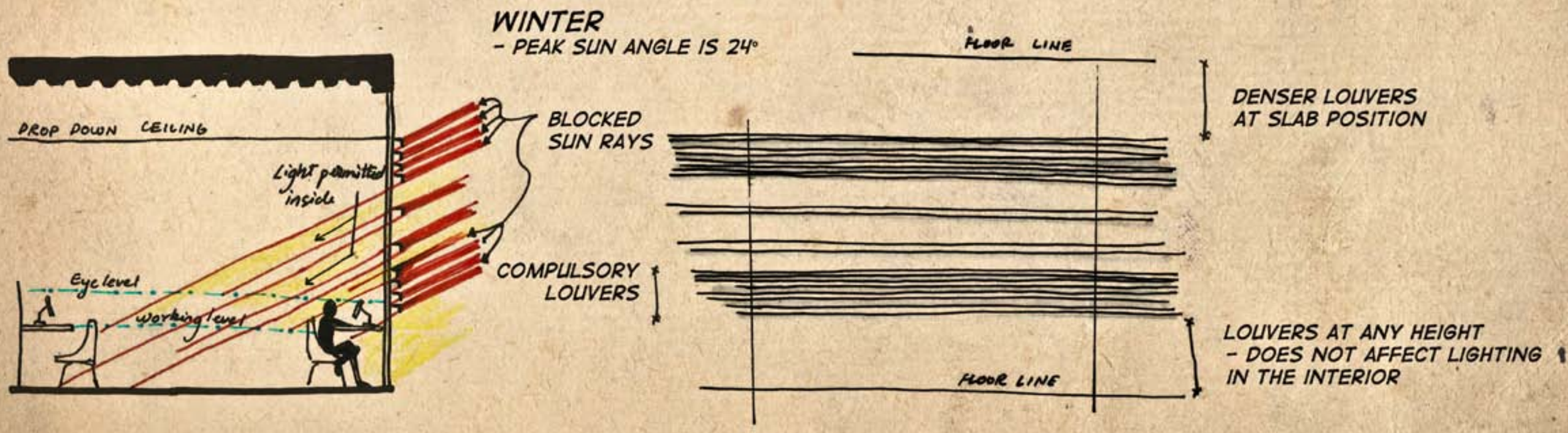
03 *WORK ON SIZE AND PROPORTIONS*







Developing the horizontal louvers



Office interiors

- The image is describes the natural conditions in the interior of the waterfront offices. At no point during the year will there be any glare at the workstations.

Patio roof alternatives

01 Louvers

- Refined Light
- Control of light is easy
- Operable louvered roofs can be easier for climate control systems
- Advanced design can help in amplyfying light and reducing glare

- High density of the louvers can be a little too much going on in the roof visually.
- Shadows formed on the floor should also be taken care of.

02 Space Frame

- Large span without columns
- Light weight
- Very industrial look
- Complexity of the stricture could however add to aesthetic quality if rest of the elements around are carefully designed

- Difficult to control light
- Shadows formed on the floor should also be taken care of.

03 Glass Roof

- Visually Light
- Possibility of lighting only through North side
- Operable sloped roofs can be easier for climate control systems
- Easier to treat situations like snowfall and rain water harvesting

- Excessive light might be a problem. Extra shading devices would be necessary

04 Waffle Slab

- Large span without columns
- Light wells provide nice quality of light

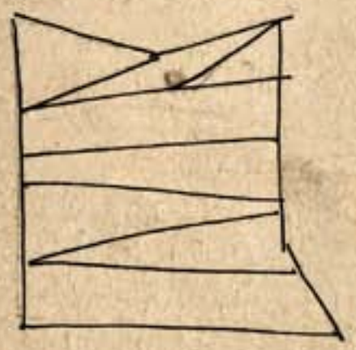
- Visually heavy
- Not convenient for climate control systems

Patio roof

Design decision to use a north light truss

As the building is not oriented to the cardinal points, the truss was skewed to align to the north

Idea of division of truss framework

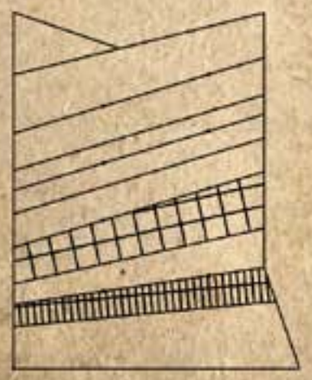


Alternative idea of using pyramid structures and have the north side glazed

Initial ideas of the roof were very complex, both in framework of the truss and directional design of the north lights.

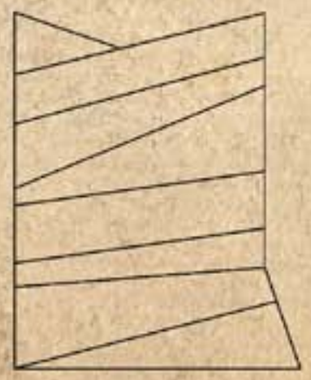
As the design developed further, the roof became simpler and frosted glass was considered an alternative material for the south side tiling. This made the entire patio to remain a glass box and yet be climate controlled.

Design on a 7m grid

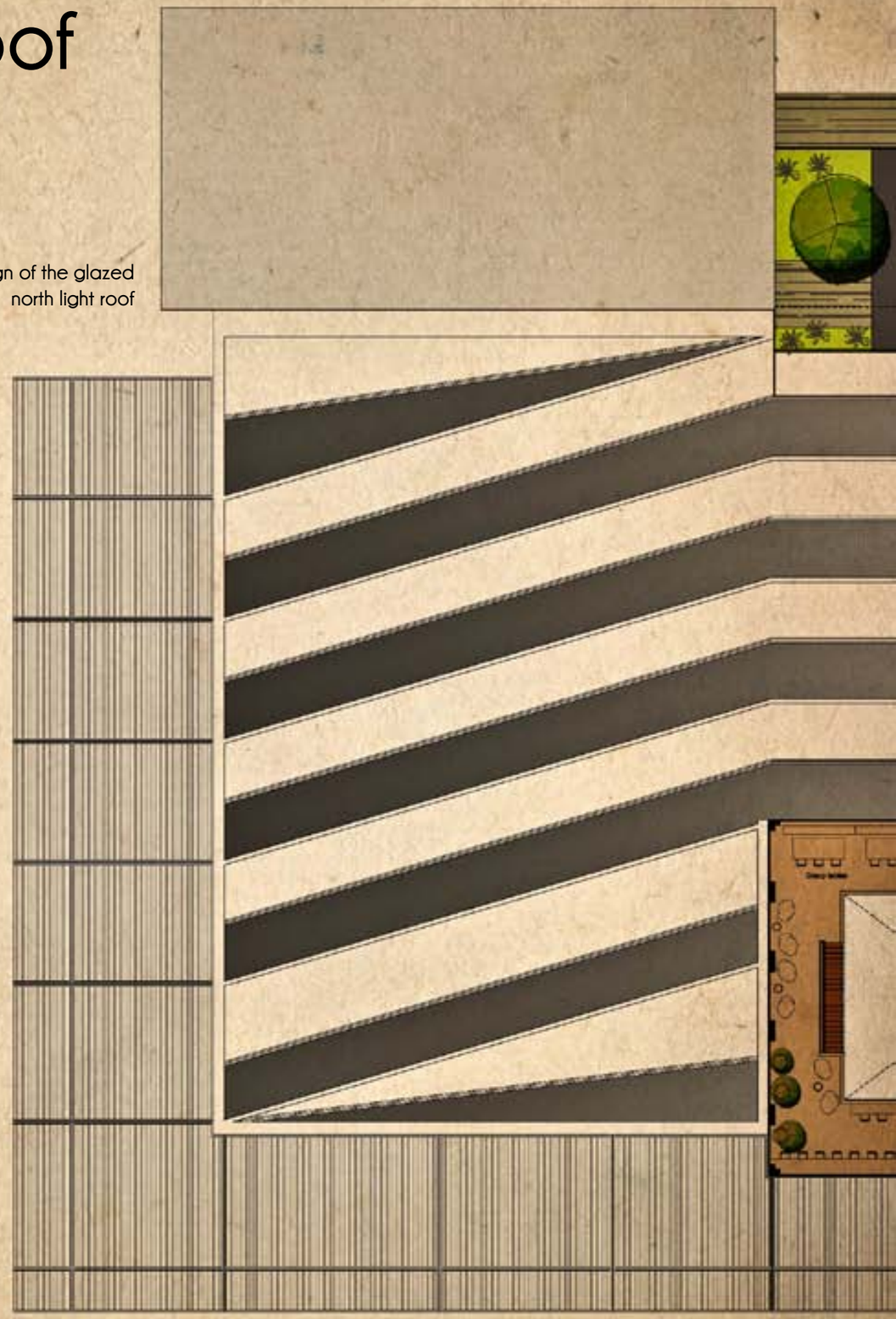


Concept

Design on a 10m grid



Final design of the glazed north light roof



The entrance patio

- View of the patio from the entrance

The entrance patio

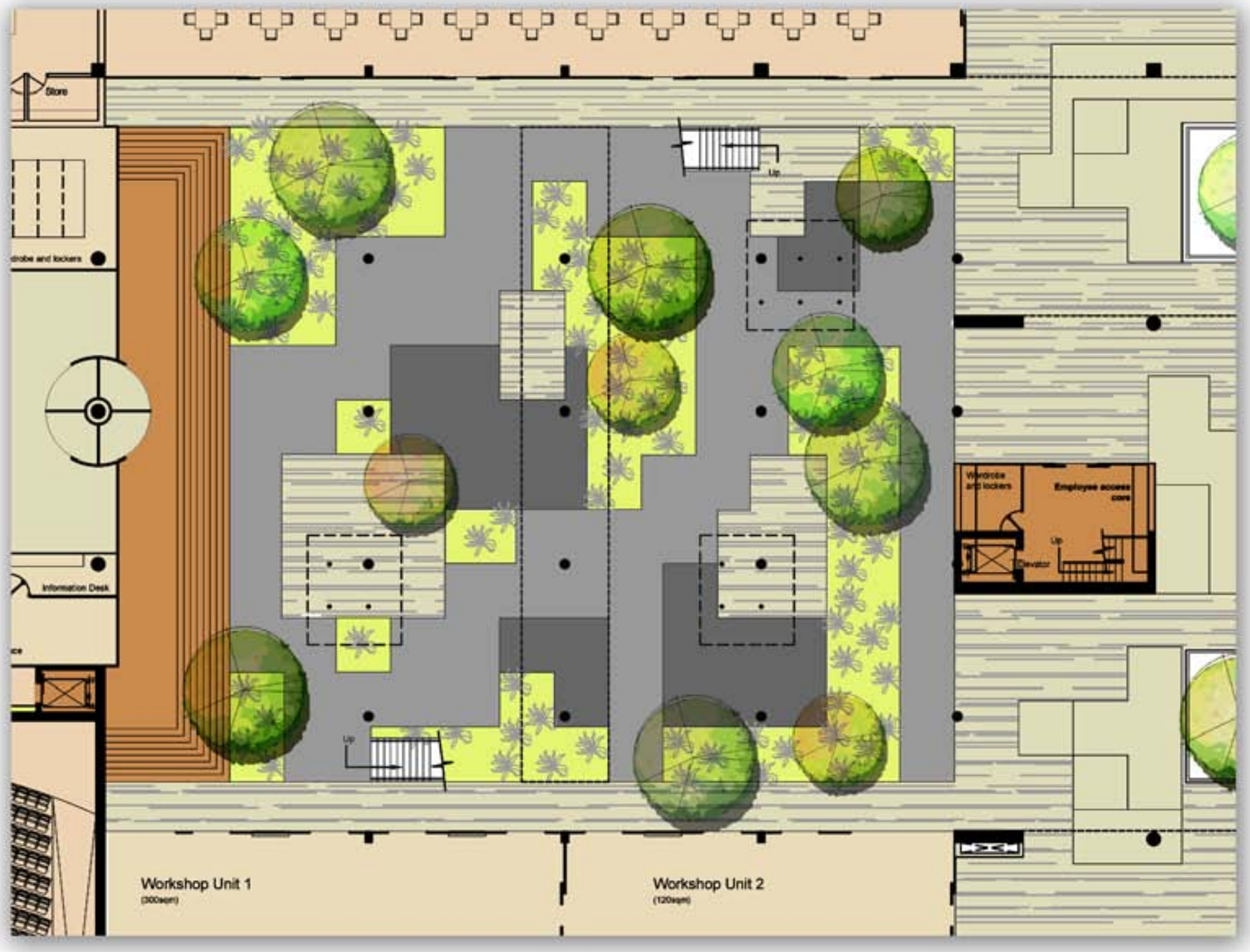
- The office lobby on the left and continuation of the exhibition and product display on the right

The entrance patio

- looking into the sculpture court from the product and exhibition display lounge

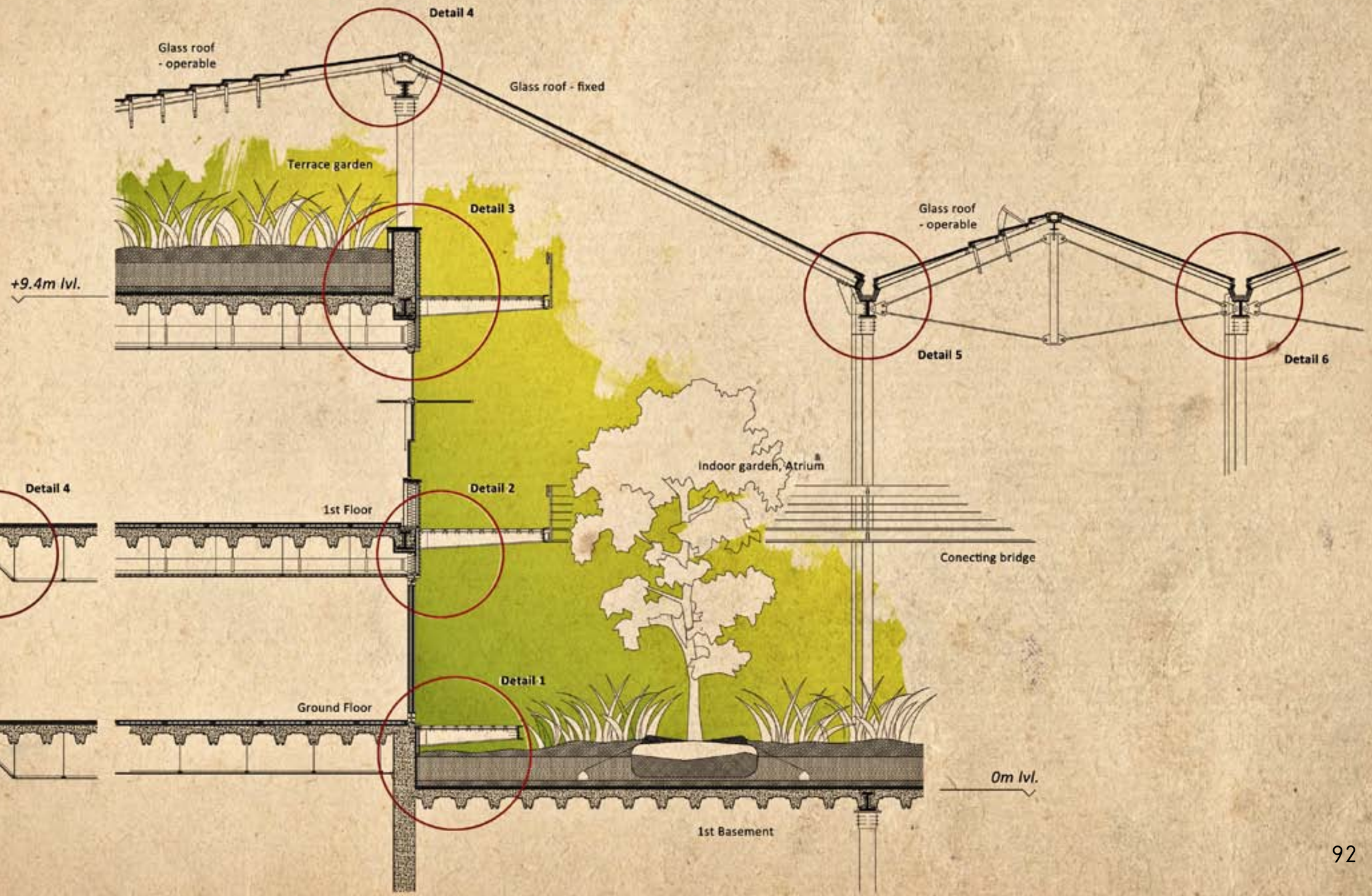
02 Center Court

Get immersed in the world of green in your daily arrival at work



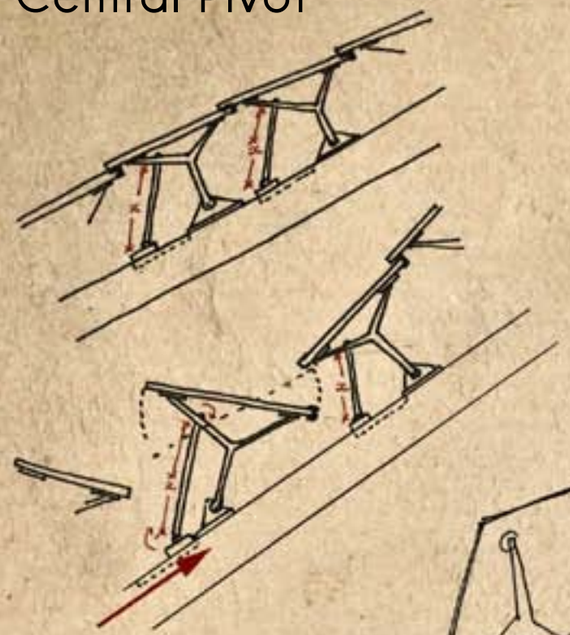
- Create an experience of a world that we have long lost as a result of destruction of ecologies over time. It gives the employees a chance to enjoy a closer relationship with nature.
- Design interior gardens that balance temperature extremes; the garden also provides gorgeous views and usable space for employees.

Part of the building for detailing



Operable roof detail variants

01 Central Pivot



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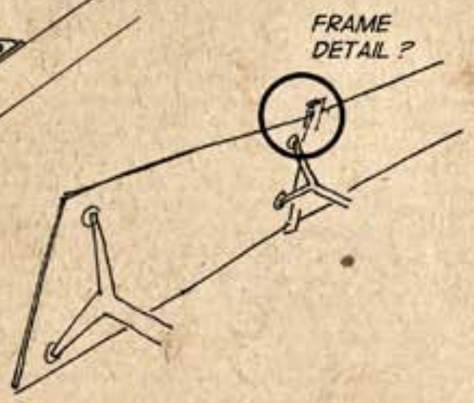
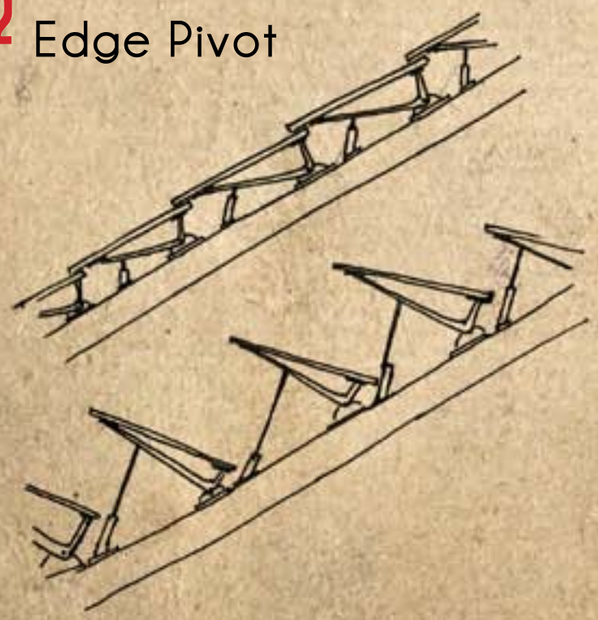


DEVELOPING A DETAIL THAT DID NOT NEED THE USE OF ACTUATORS OR PISTONS

02 Edge Pivot



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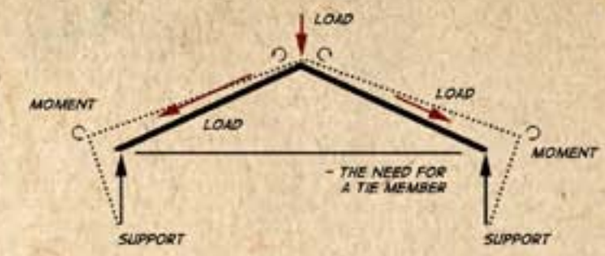
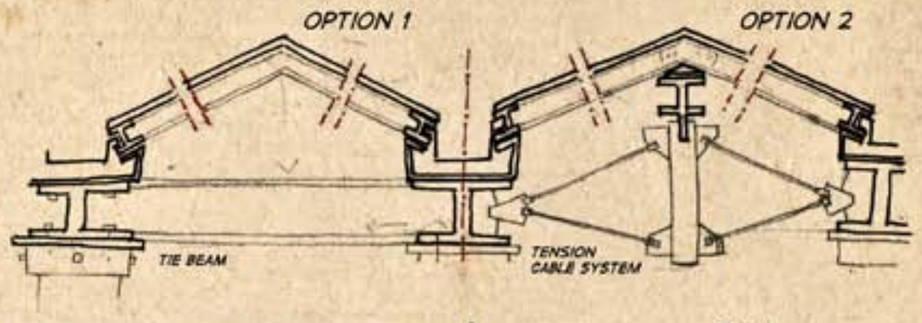
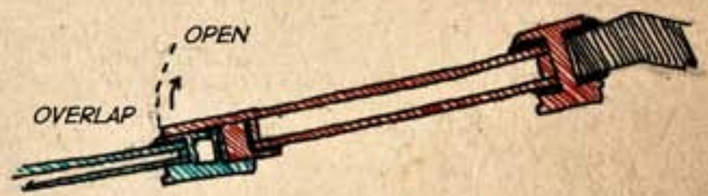
03 Standard Roof Glazing

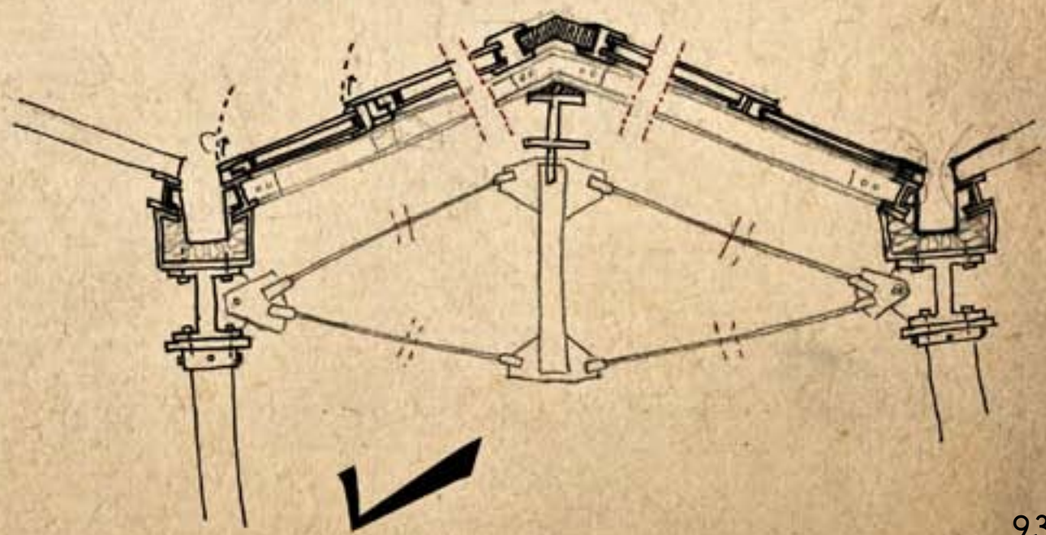


THE NEED FOR A TIE MEMBER IS CAUSED BY THE MOMENTS CREATED AT THE JOINTS WITH THE COLUMNS. BUT INSTEAD OF USING A BEAM, I DECIDED TO USE A TENSION CABLE SYSTEM TO SPAN THE TRUSS. THIS MAKES THE STRUCTURE VISUALLY LIGHTWEIGHT AS WELL.

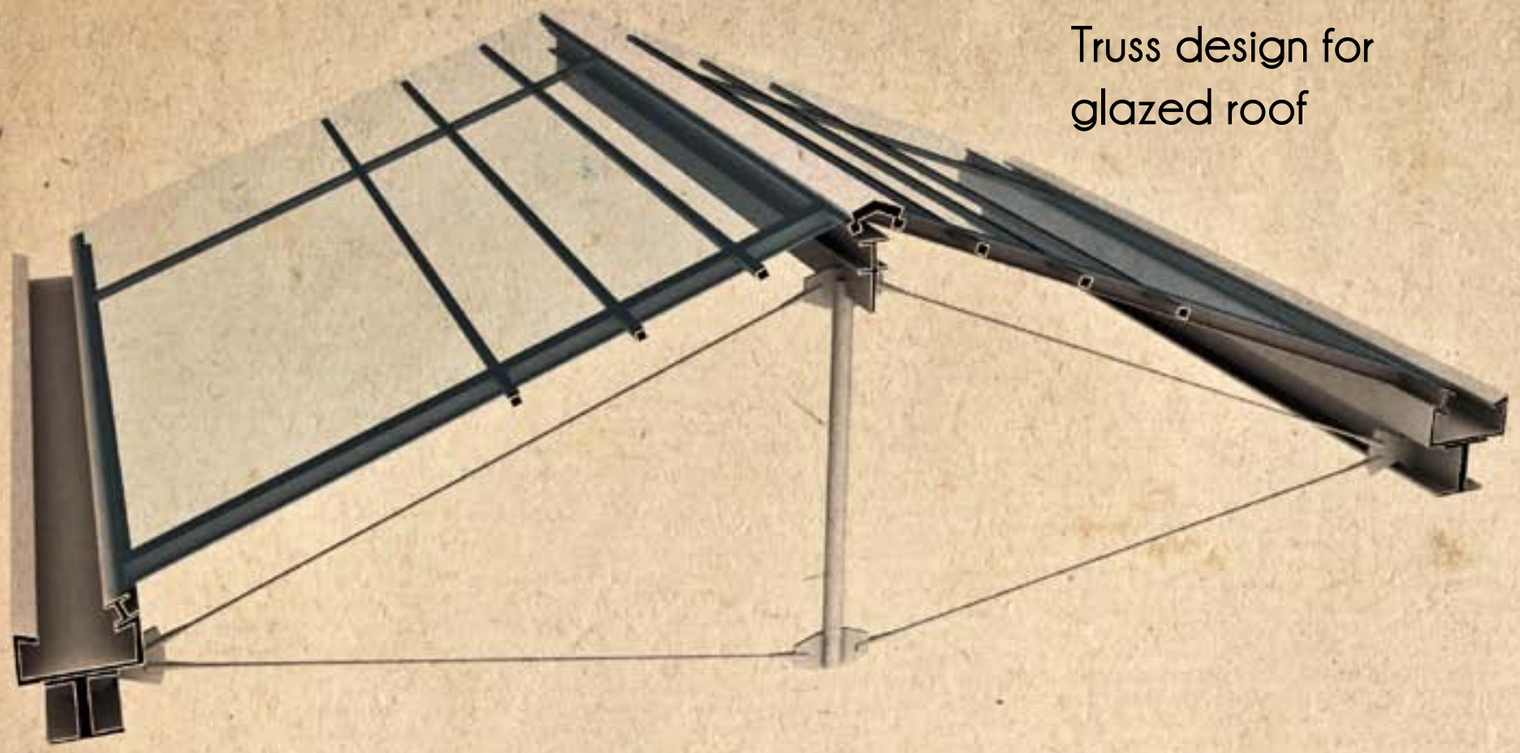


NEED FOR WEIGHT AND STABILITY

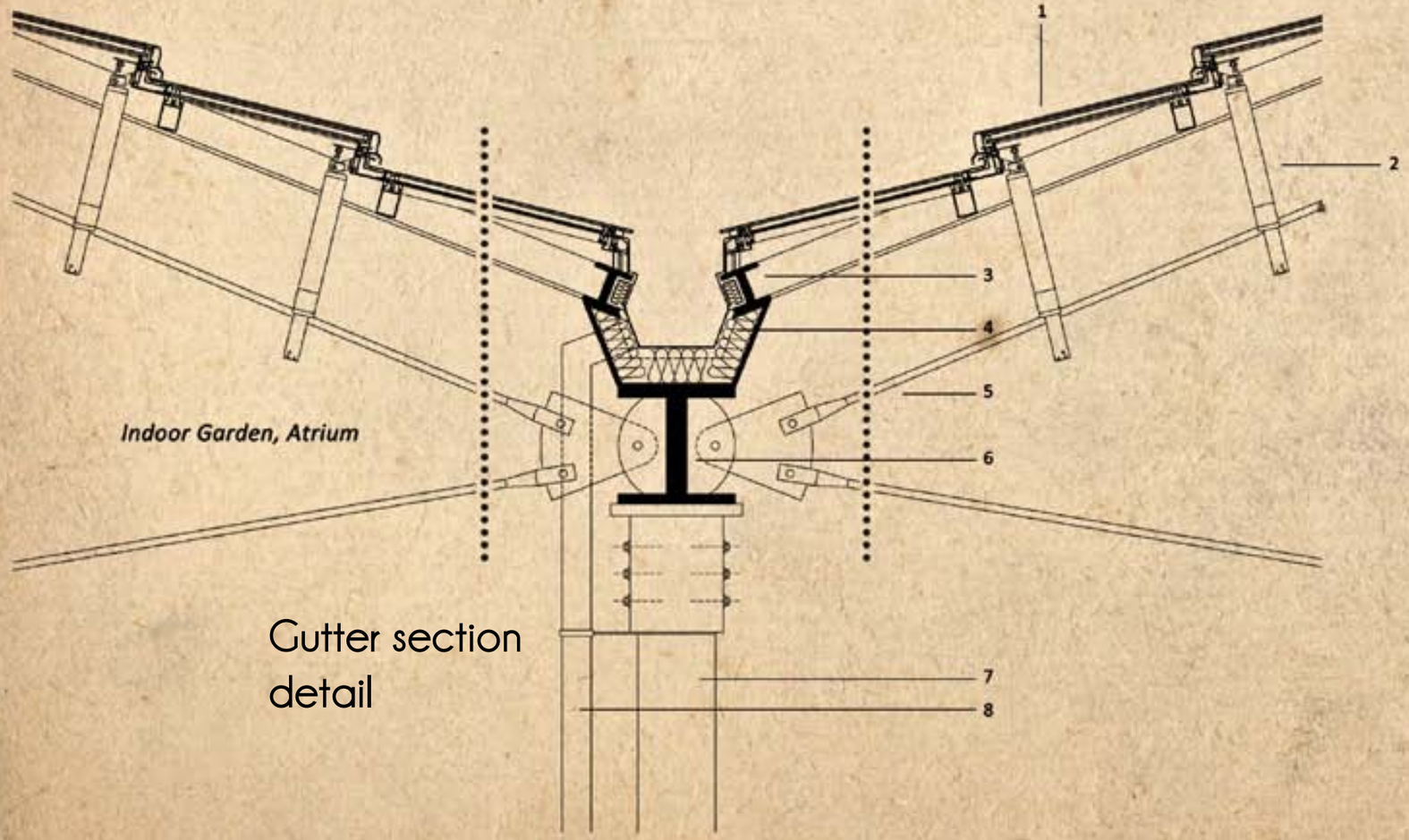




Glazed roof design



Truss design for glazed roof



Indoor Garden, Atrium

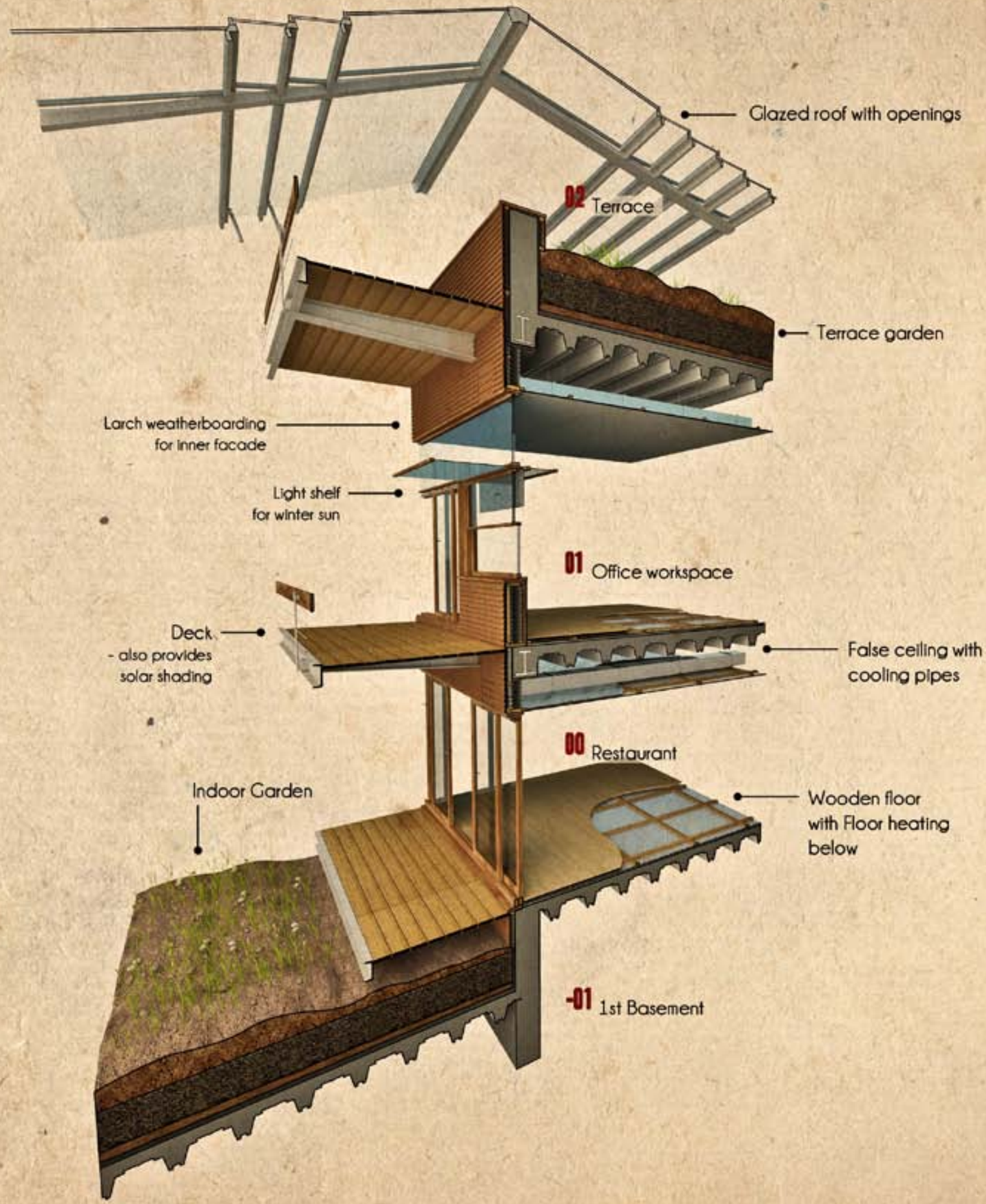
Gutter section detail

1. Double Glazed openable roof window with 160mm aluminium profile
2. Actuators, for opening roof glazing - connected to window through welded aluminium angle
3. 100mm Steel I-beam
4. Gutter section
   - Steel sheet, folded to profile
   - Water proofing layer
   - Insulation
   - 10mm folded Steel plate

5. 20mm thick Steel Tension cables, hinge joint
6. 300mm Steel I-beam, resting on 30mm circular Steel plate
7. 300mm hollow circular Steel column
8. 7.5mm dia. rain water pipe from gutter

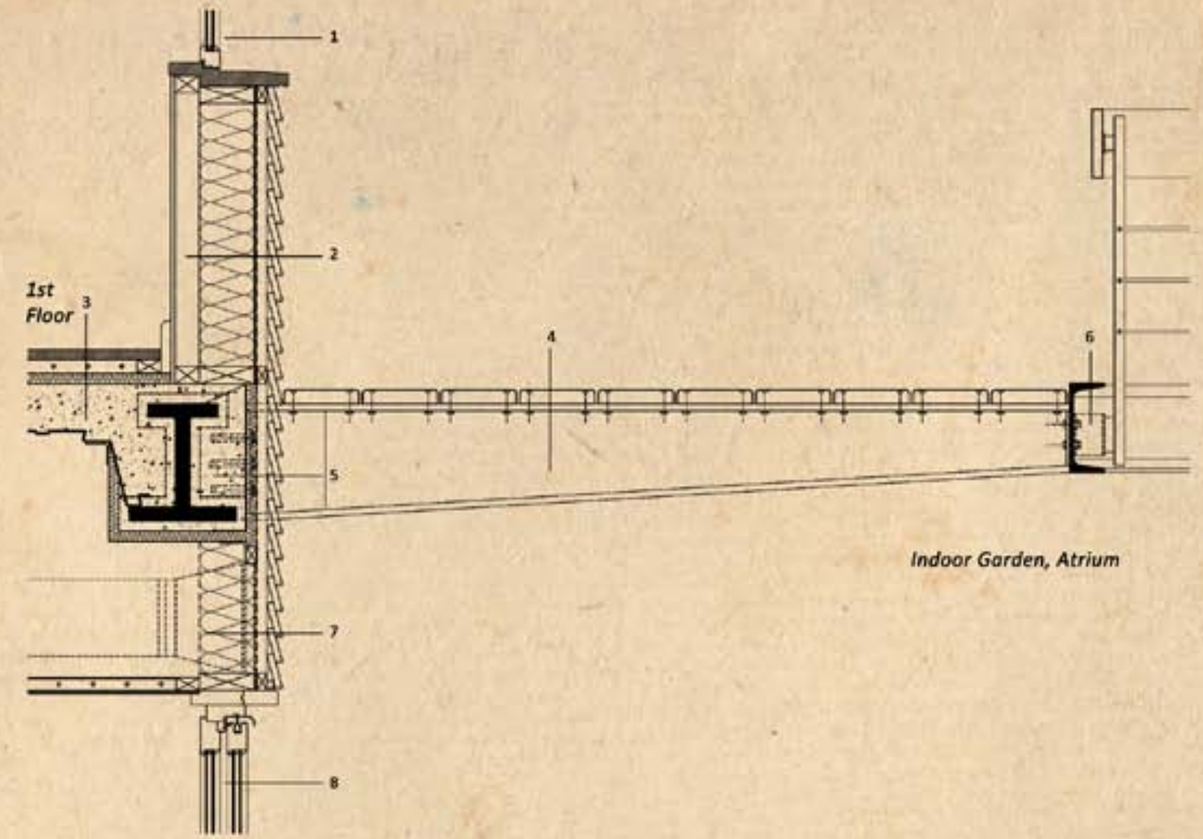
Inner Facade -

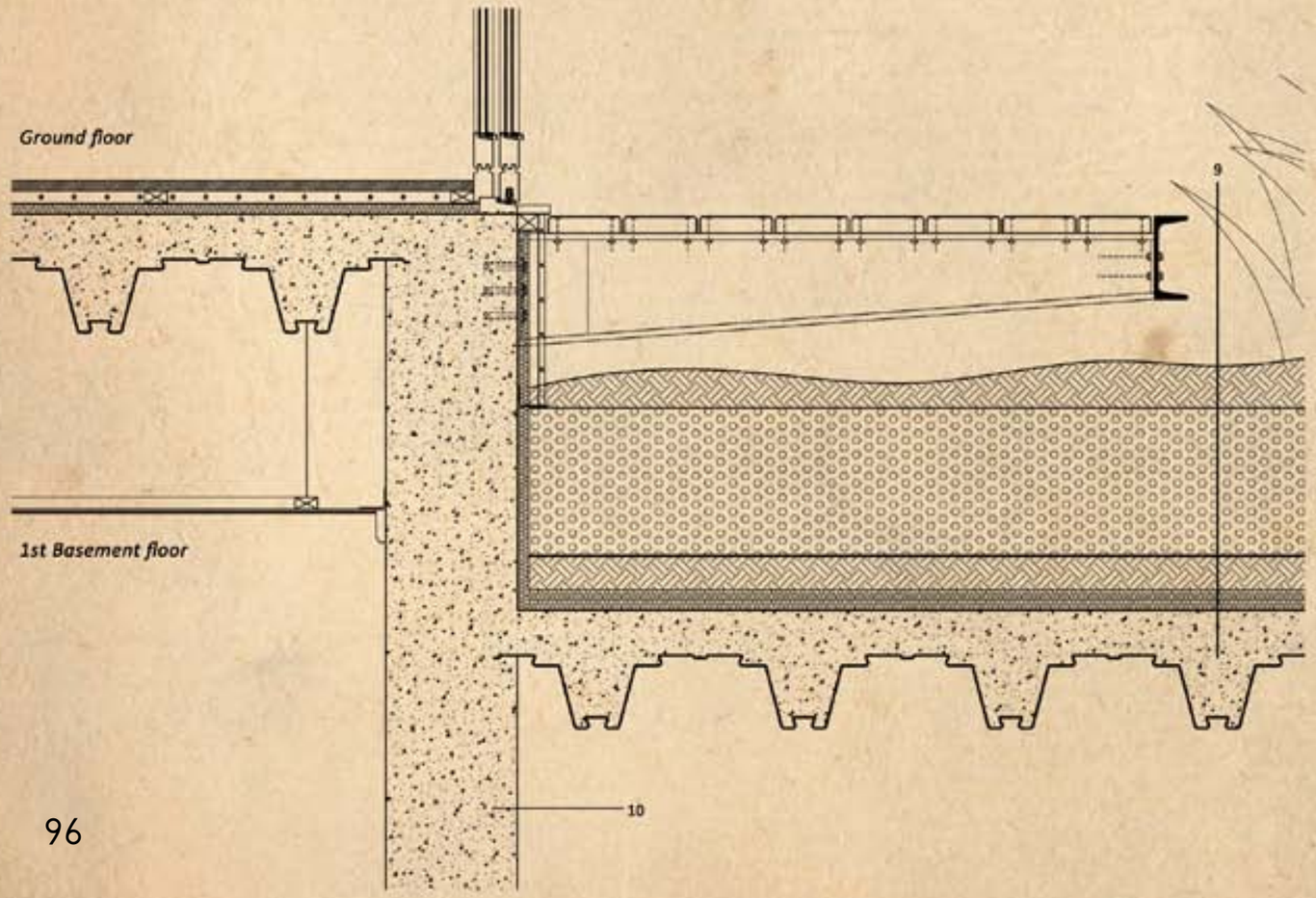
sectional detail
perspective



Inner facade detail

- Center Court





1. Double Glazed vertical Sash window
2. Wall section
   19.5 x 100mm treated Larch weatherboarding
   50x30mm post and rail frame
   Water-proofing layer
   5mm Plywood board
   50x160mm post and rail frame with Insulation
   Water-proofing layer
   50x70mm post and rail frame
   Gypsum fibre board

3. Floor section
   Laminated wooden tiles supported by joists
   Floor heating pipes 10mm dia.
   Reflective metal sheet
   30mm Insulation
   360mm thick Concrete deck slab on steel sheet

4. Deck section
   50x200mm wooden deck boarding, varnished
   340/200mm Steel I-beam, anchored to beam

5. 300 ASB 249 Assymetric Slim Floor beam, fire coated
6. 240mm Steel I-beam, cropped
   30mm dia. steel tube balustrade, anchored
   200x30mm wooden railing

7. Exhaust duct, wooden boarding seperated with gaps for ventilation
8. Double Glazed wooden Sliding door
9. Indoor garden section
   Dense vegetation
   Planting soil mix
   Compacted structural soil mix
   Filter Fabric
   Haydite - high performance aggregate
   60mm Insulation
   Waterproofing layer
   360mm thick Concrete deck slab on steel sheet

10. 400mm thick concrete shear wall

The center court

First Impression of the center court is intended on creating an experience of a world, long lost as a result of destruction of ecologies over time. It gives the employees a chance to enjoy a closer relationship with nature.

The center court

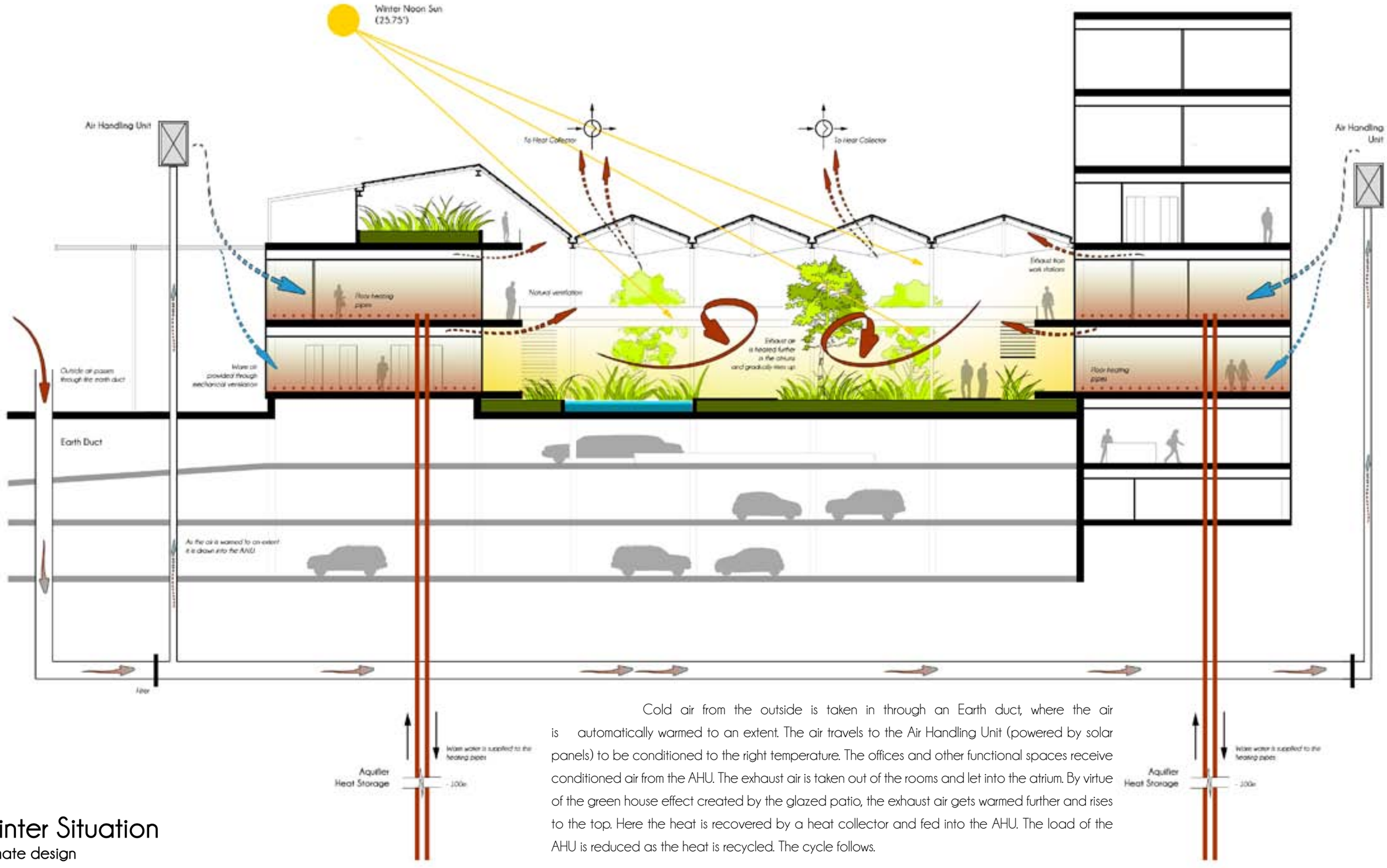
The interior gardens balance temperature extremes and are treated as relaxation gardens providing gorgeous views and usable space for employees.

The center court

Pergolas and water ponds provide good relazation spots. These green working spaces create the feeling of being sheltered in nature

Climate design

saving energy through sustainable concepts

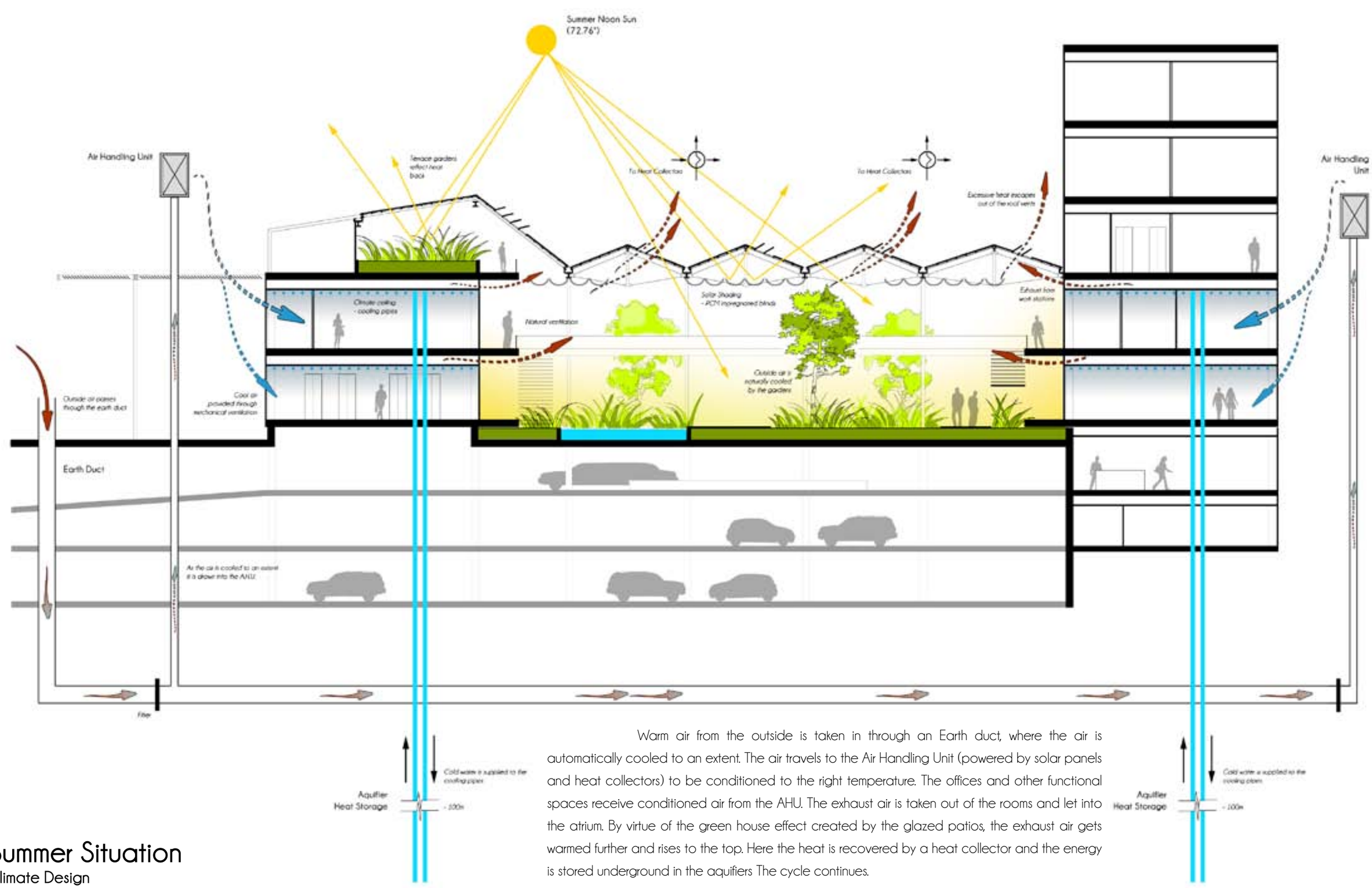


Winter Situation

Climate design

Cold air from the outside is taken in through an Earth duct, where the air is automatically warmed to an extent. The air travels to the Air Handling Unit (powered by solar panels) to be conditioned to the right temperature. The offices and other functional spaces receive conditioned air from the AHU. The exhaust air is taken out of the rooms and let into the atrium. By virtue of the green house effect created by the glazed patio, the exhaust air gets warmed further and rises to the top. Here the heat is recovered by a heat collector and fed into the AHU. The load of the AHU is reduced as the heat is recycled. The cycle follows.

For a secondary heating system, hot water through pipes is run under the floor. The heat stored underground in the aquifiers is used to warm the hot water, thus ensuring minimal electrical energy being spent on heating the spaces.



Summer Situation

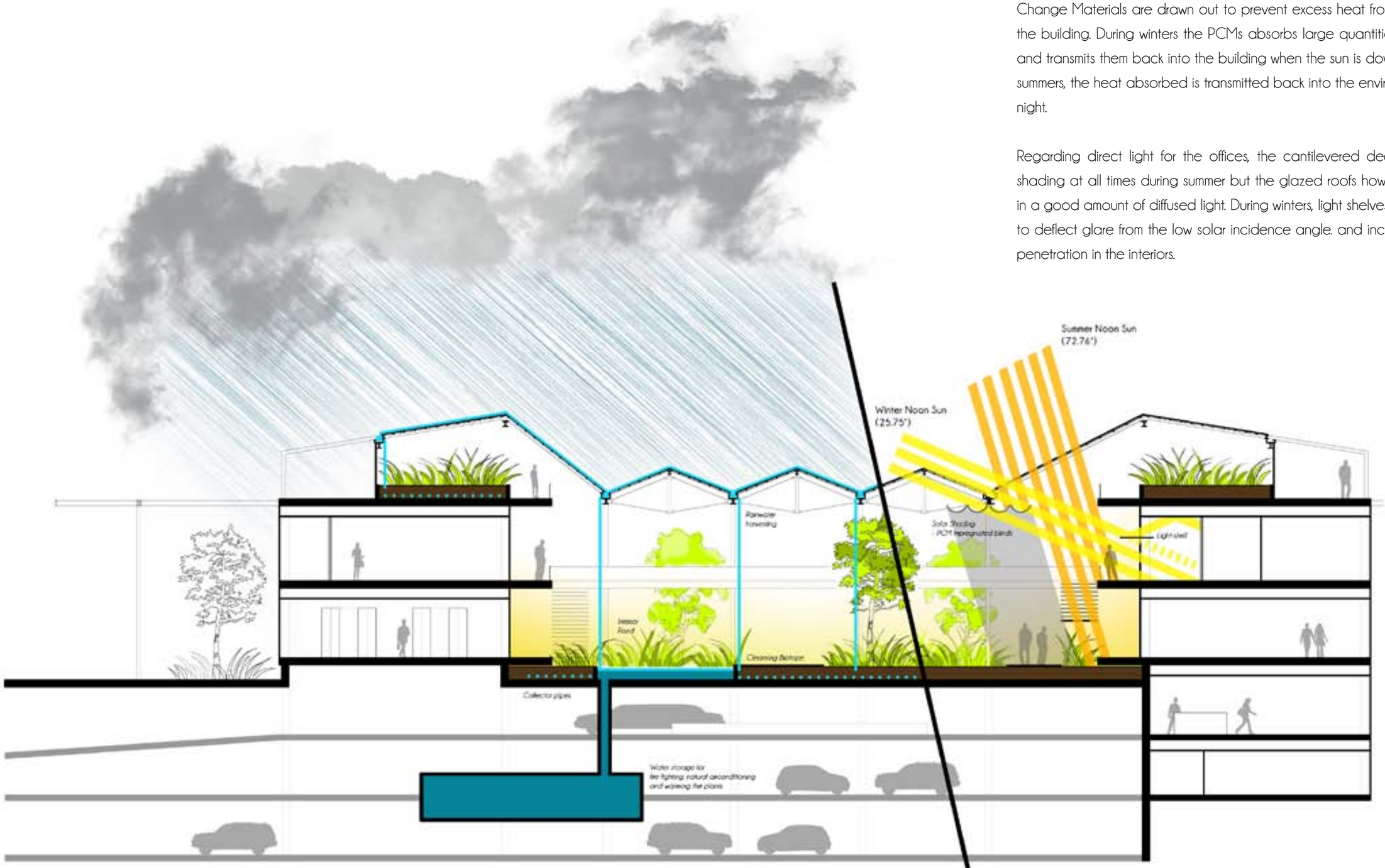
Climate Design

Warm air from the outside is taken in through an Earth duct, where the air is automatically cooled to an extent. The air travels to the Air Handling Unit (powered by solar panels and heat collectors) to be conditioned to the right temperature. The offices and other functional spaces receive conditioned air from the AHU. The exhaust air is taken out of the rooms and let into the atrium. By virtue of the green house effect created by the glazed patios, the exhaust air gets warmed further and rises to the top. Here the heat is recovered by a heat collector and the energy is stored underground in the aquifiers The cycle continues.

For a secondary cooling system, cold water through pipes is run above the false ceiling. The water from aquifers are used to cool the cold water inside the pipes, thus ensuring minimal electrical energy is spent on cooling the spaces.

During summer, roof blinds impregnated with Phase Change Materials are drawn out to prevent excess heat from entering the building. During winters the PCMs absorbs large quantities of heat and transmits them back into the building when the sun is down. During summers, the heat absorbed is transmitted back into the environment at night.

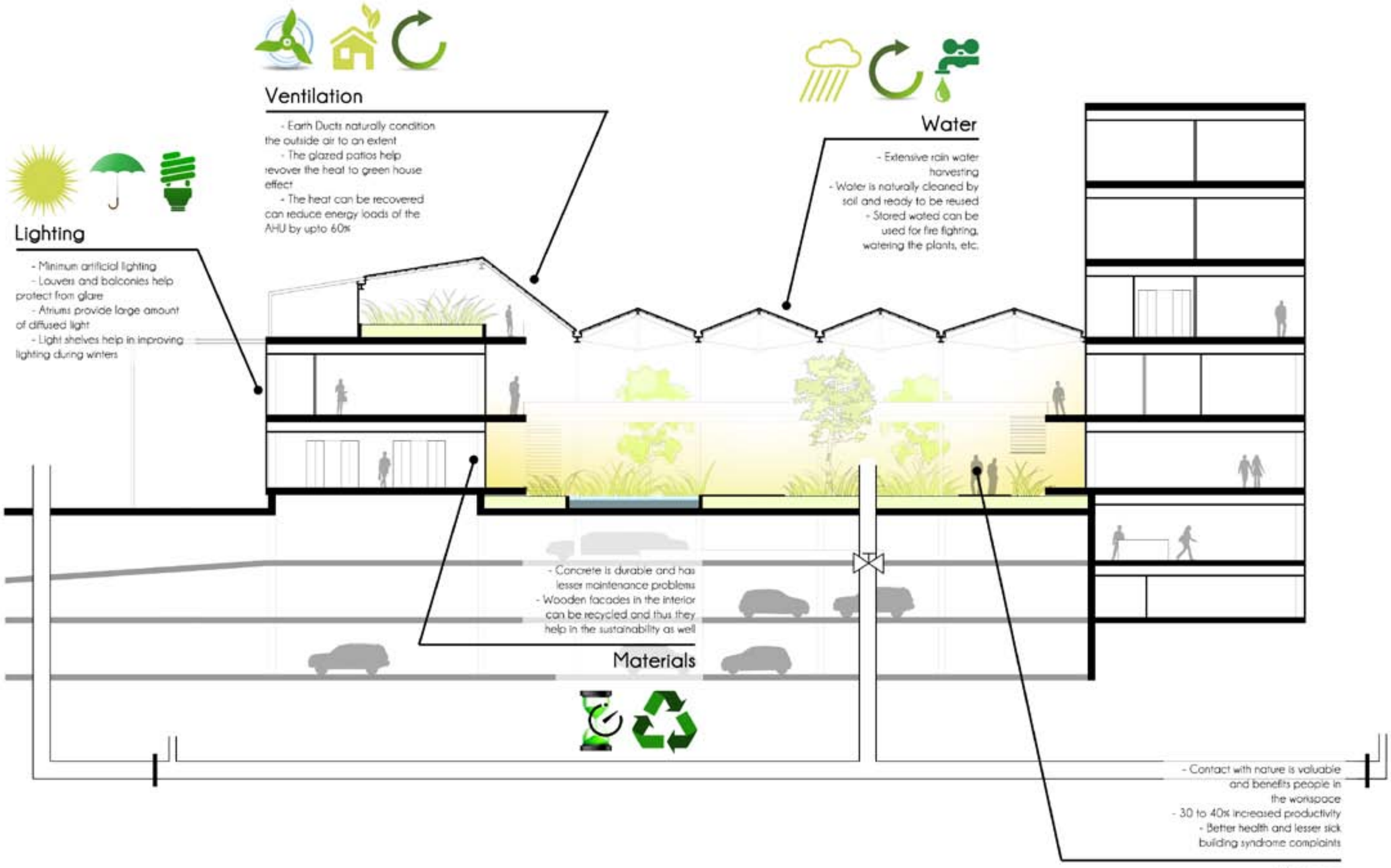
Regarding direct light for the offices, the cantilevered decks ensure shading at all times during summer but the glazed roofs however bring in a good amount of diffused light. During winters, light shelves are used to deflect glare from the low solar incidence angle. and increase light penetration in the interiors.



Water Management

With extensive gable roofing systems, the rain water is collected through the gutters and fed into the soil used for planting in the patios. Acting as a cleansing biotope, the water is cleansed and is stored in the patio as an aesthetic feature. The excess water is collected, filtered and stored in the underground tank below the auditoriums. This water is later used for purposes like watering the plants, fire fighting and even natural air conditioning.

Daylighting



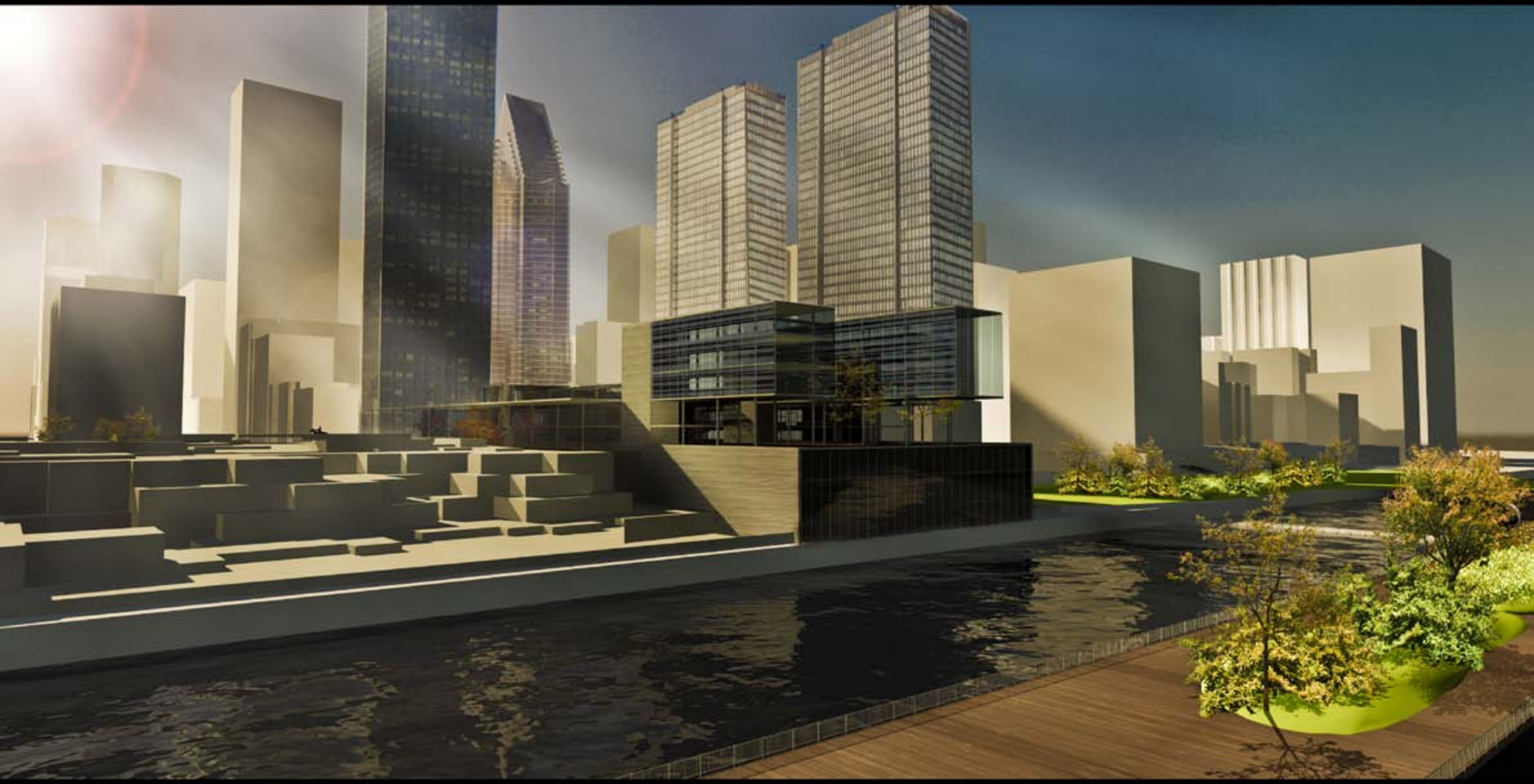
Conclusions

The green patios are the pillars of the building's sustainability concept. The climate scheme, choice of materials and other energy saving solutions are integrated within the design and not an after-thought.

Visualizations

UN Environmental Council

- Night view of the entrance patio of the building from the UN Park.



UN Environmental Council

- View of the building along with the UN Park water front from the new bridge on the masterplan.

UN Environmental Council

- View of the building along with the UN Park from one of the skyscrapes beside the site

The Green Lantern

Lighting the path forward