

Open the gates
Asmaa Abdellahy
Sustainable Urban Design
Masters degree project
Lund University, Sweden
Supervisor: Johnny Åstrand
Examiner: Peter Siöström
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Introduction

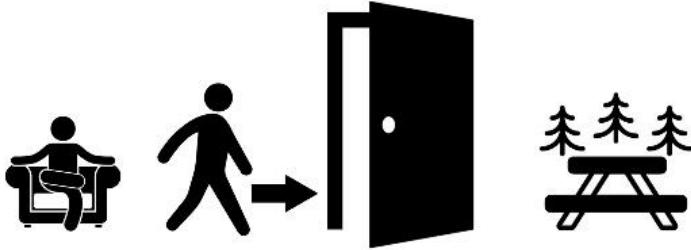


Open the gates.

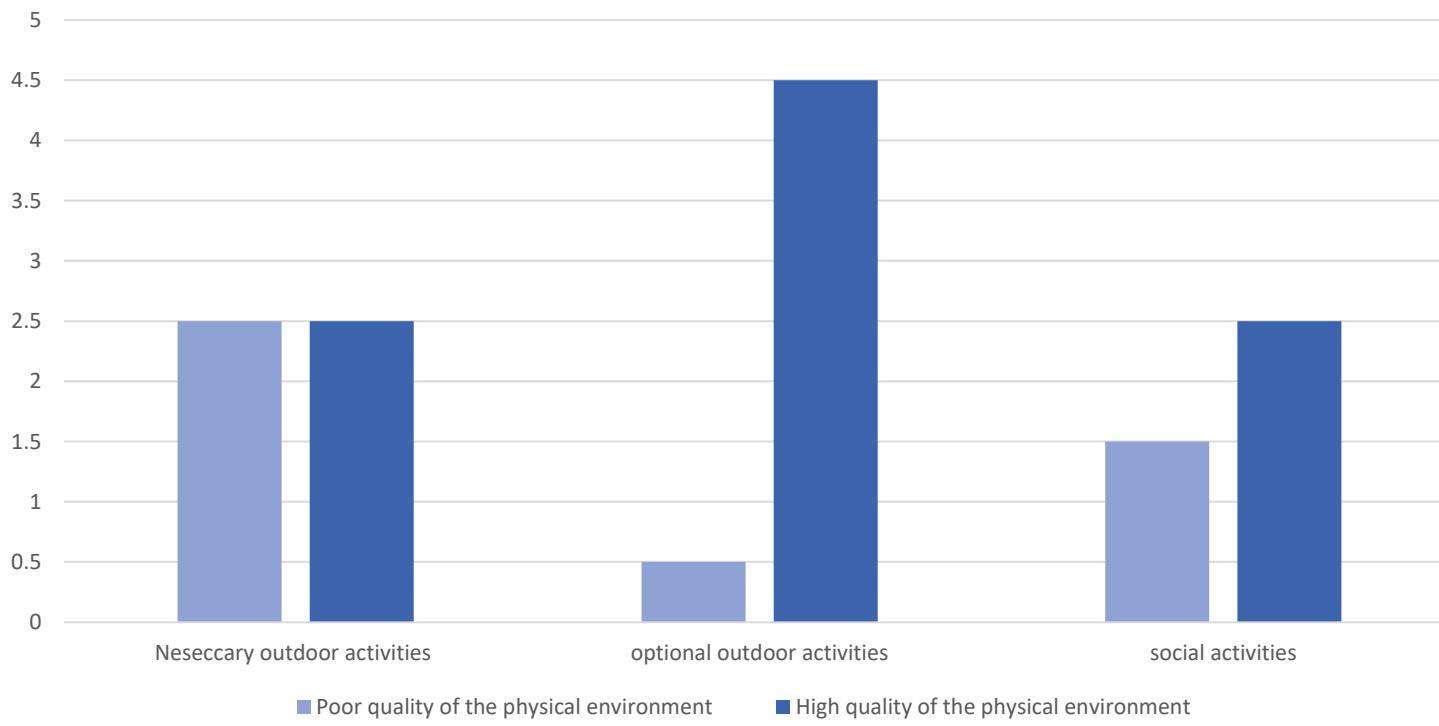
Egypt, the Greater Cairo.

This thesis project explores the relationship between social and spatial factors on many different levels: relation between two kinds of people living standards; buildings and the land; indoors and outdoors spaces; public and private. So coexistence, communication, and interaction are my keywords to translate all my ideas in a project. How to shape people's daily life? How to encourage them to open their closed doors and let them communicate in a livable environment? How to activate streets for everyone, not only for people in cars? How to provide open recreation areas and remove barriers? How to free minds and let people experience happy moments?

Moving through three gradual urban scales: city scale, neighborhood scale, and units scale, allowed me to explore different design perspectives. It allowed having an overall sight and to dive into details, trying to solve social and spatial problems in New Cairo City. My point of departure was my knowledge about my home country and its ways of building formal and informal urban cities, linking it to the experience and knowledge I have gained the last two years, could make me have a better understanding on many different levels of urban design.



the relationship between the quality of outdoor spaces and the rate of occurrence of outdoor activities.



What makes me leave home

My departure point was my curiosity of understanding the activities happening in the daily life of people and its relations with the small and big scale of urban areas inside and outside their homes.

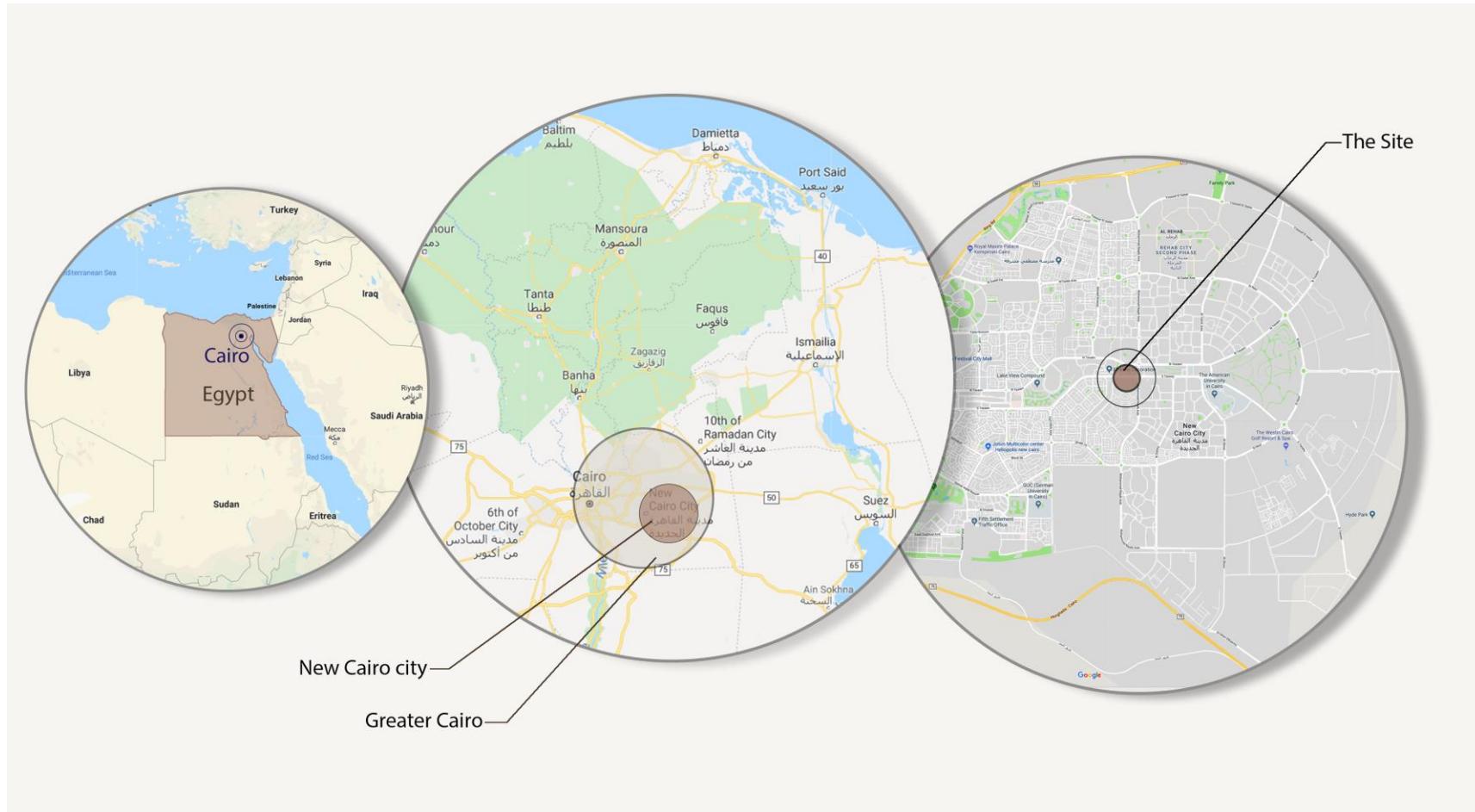
Rush hours: Kids going to school, adults heading to their work, the entrances they use, intersection between different types of people, what they need in the transition spaces.

Day time: a small family have a breakfast in their private garden, a neighbor says Hi to the family from the courtyard, their son rides his bike in the garden, a neighbor works on her laptop at home facing the garden outside, enjoying the light coming from the window, a man welcomes his guests in front of the entrance, an elder man walks through the walk side to go to the supermarket.

Evening time: some of neighbors meet together, have their drinks at the semi-private area, the kids playing together in the kid's area, an elder woman walking to get some fresh air, a young man practices his sport time at the garden, etc.

These daily practices and their complexity got me thinking: what makes people leave their homes and decide to communicate with the outer environment? How the urban design and architecture help enhance these processes and make them more attractive?

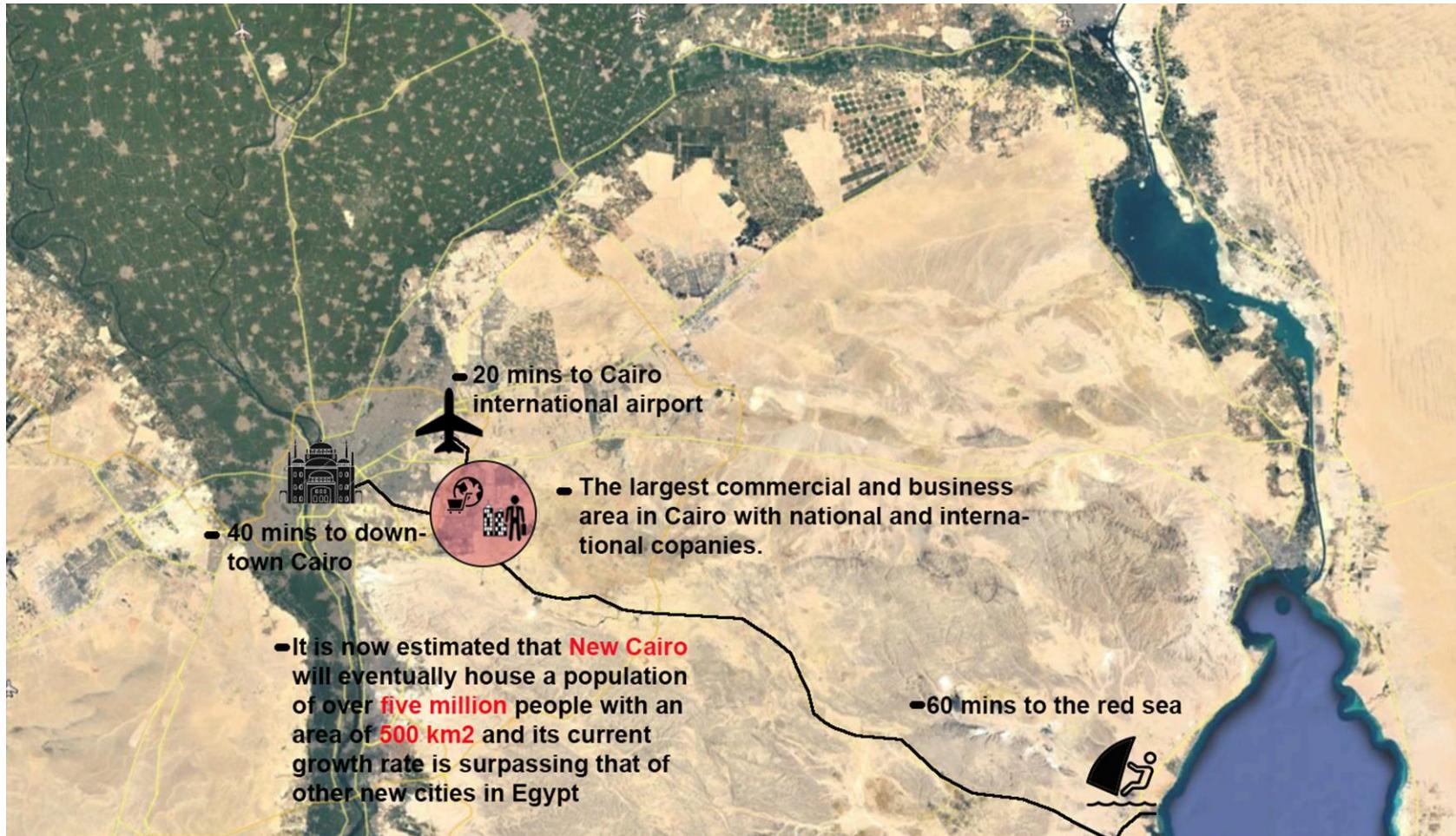
Site Analysis



Location:

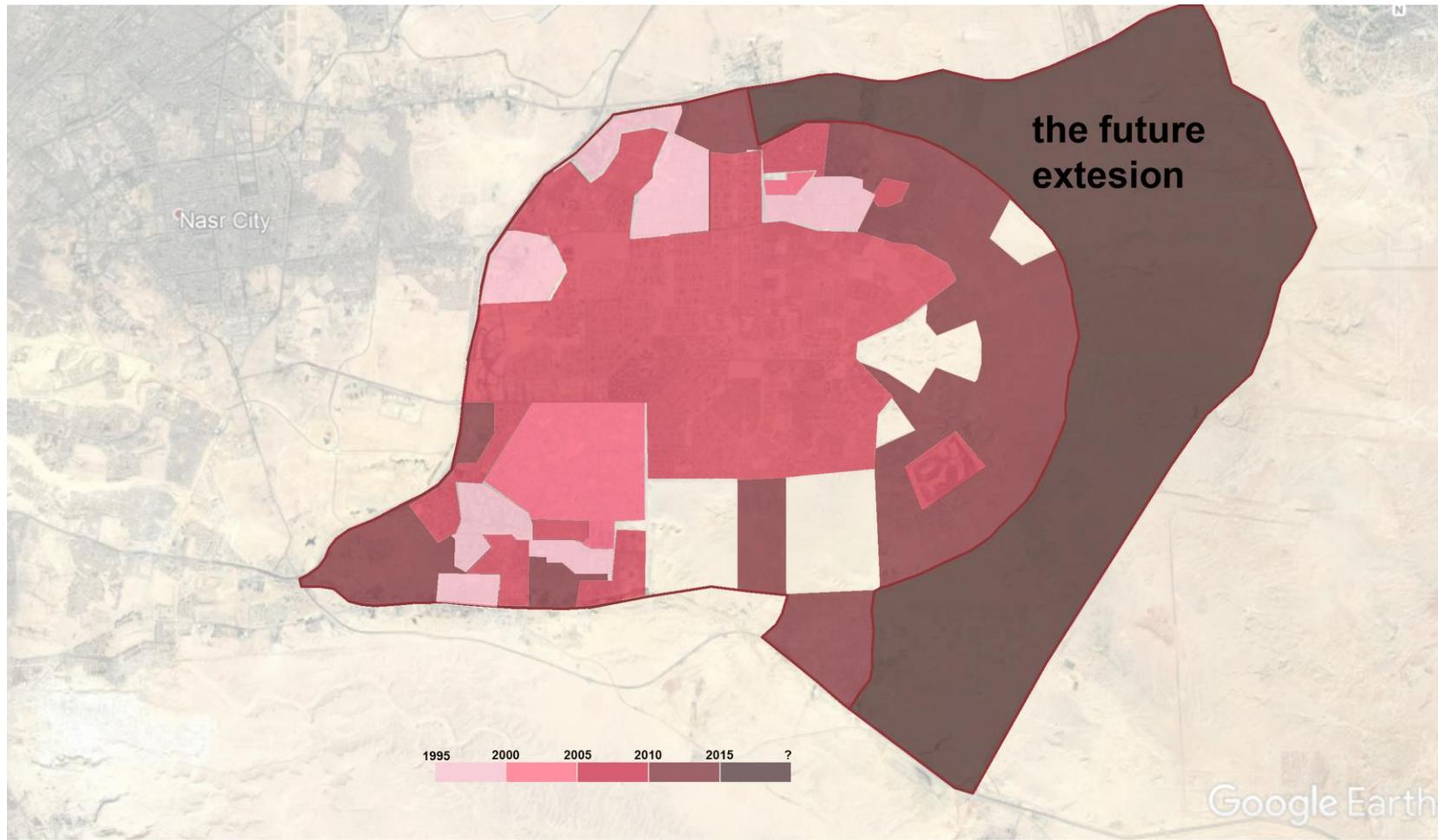
My project is located in Egypt, at the eastern outskirts of the capital, Greater Cairo, which has a wide expansion of new urban communities since the eighties.

The new city is called New Cairo, which was expected to be the new downtown of Greater Cairo.



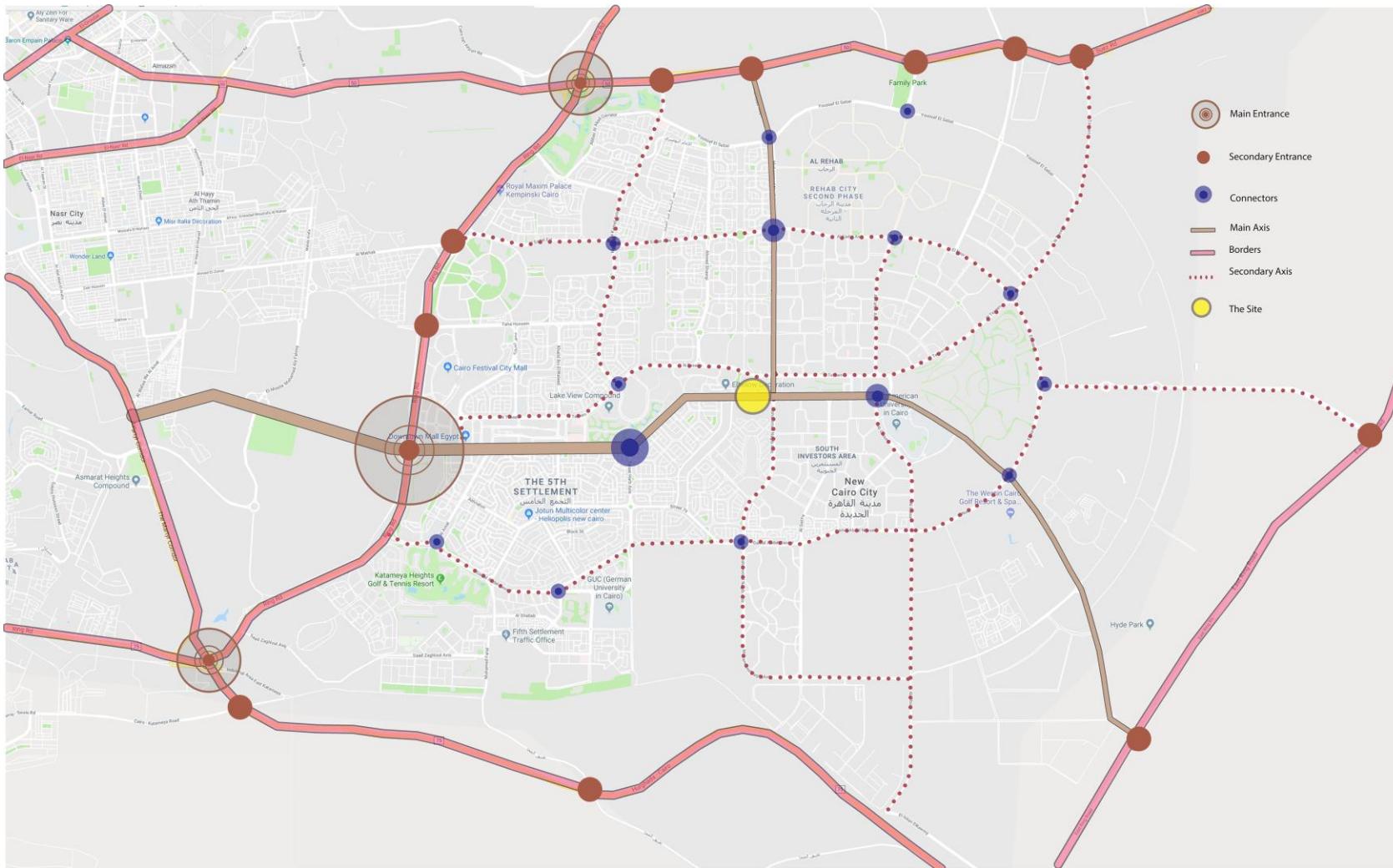
Potentials:

The site is located in a very strategic point of new Cairo city, which has so many high potentials to be the new downtown, as it is 20 minutes away from Cairo International Airport, 40 minutes by car to the existing down town, 60 minutes to the Red Sea, and it has an area which is considered the largest commercial and business area with national and international brands and companies. Moreover, it is now estimated that it will eventually house a population of over five million people with an area of 500 km² and its current growth rate is surpassing that of other new cities in Egypt.



Urban Growth:

At the middle of the 1990s, and due to the population growth, Cairo governorate decided to have an expansion on the eastern side of the capital. The expansion had a slow growth at the first ten years since the beginning, then the boom was from 2005 till 2010, as people living in the eastern side of Cairo started to move to the new city in large numbers, then a lesser expansion happened from 2010 till 2015, and the city started its future extension from 2015 till this moment and it is not stopping.



Borders – connections – entrances

New Cairo city is surrounded by two highways to Suez and Ain Sokhna city, both of which are coastal cities overlooking the Red Sea.

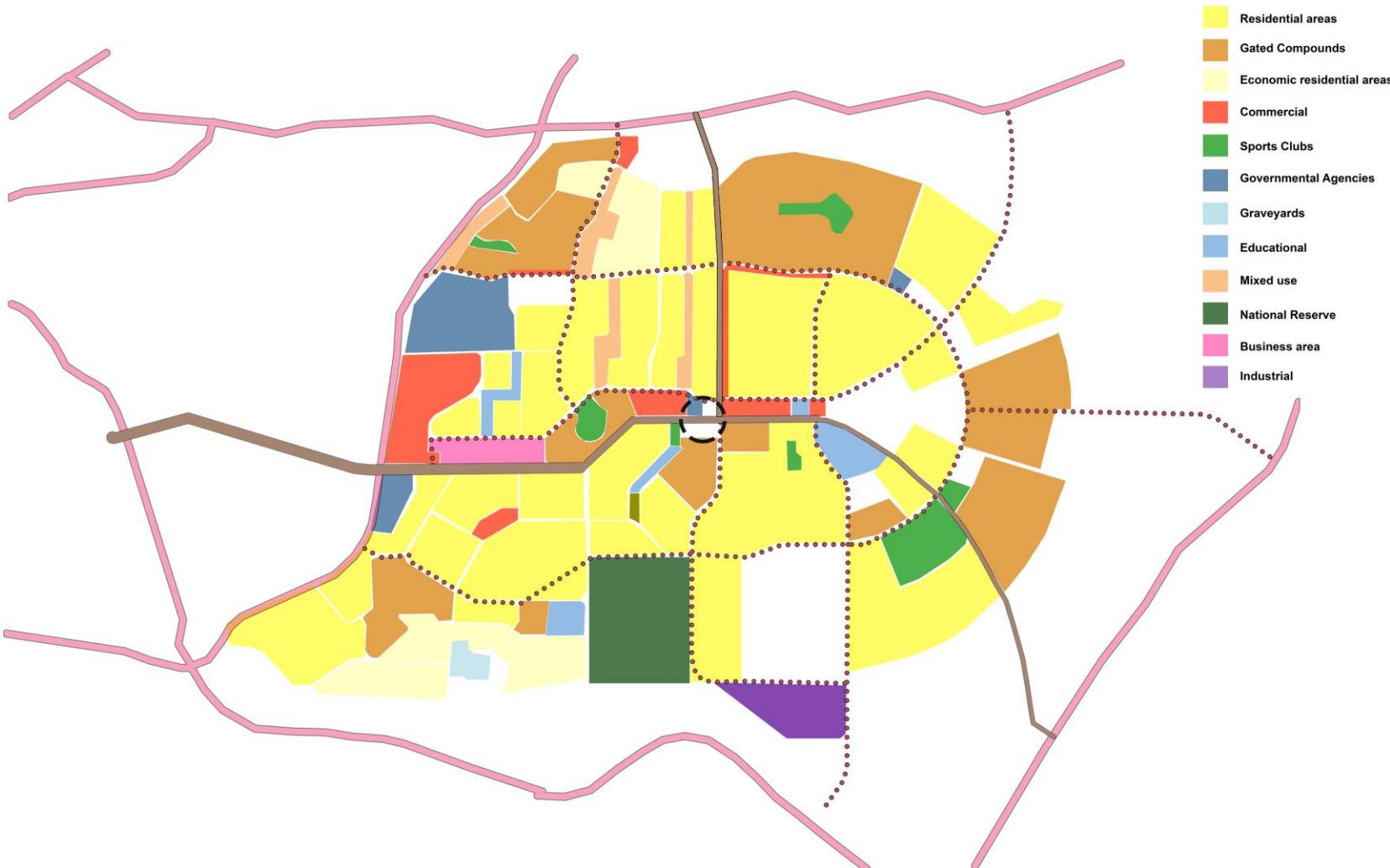
It is surrounded also by two main axis: the main ring road of the greater city and the east ring road.

It has three main entrances linking the city to the old downtown and the surrounding districts, and has many secondary entrances linking it with the new urban communities around the area.

There is a main axe called Teseen street which has the largest business and commercial areas in new Cairo and the most famous street nowadays, as a result of the huge expansion that happened on it.

My site is located at Teseen street in a very strategic point almost in the middle of the city.

Land use



Most of the city land is residential neighborhoods. Some of them are open communities connected to other services in the city, some other neighborhoods are gated communities, which have their own services, living in a bubble, feeling the qualities of their separation from their point of view.

The city has educational services including schools and university campuses.

The problem is that most of services are gated and only open for those who can pay.

There are two economic residential areas which house middle class residents and the workers live in the area as a result of the constructions happening in the new city.

One of the potentials in the city is the existence of the National Reserve called the Stone Forest which has prehistoric petrified trees and other interesting geological features. The governorate developed the area around it to allow people to visit it.

One of the most important areas in the city is the business, commercial and industrial areas which have national and international companies and brand

Greater Cairo: formal and informal planning, people interaction with urban areas in different classes





Informal districts

That is how the informal districts were built in the 1980s. Very compact concrete blocks, with no green areas, no public spaces, very narrow streets comparing to buildings' heights. You can't even see the sky while walking its streets, showing a neglect for the human scale, and people needs. That kind of informal designs accelerate the deterioration of areas. It is getting more polluted because of the lack of fresh air and the lack of green spaces and increasing emissions and the hot climate, so now it is in a very poor condition in terms of the social and spatial perspectives.



How people interact with the public areas

A good way to explain it is to see an example of the relationship between people and their public services at the gated parks or at streets: the water features. It is considered shameful to use the water features even if it is designed to be used in the hot weather, as people complain about seeing kids playing with water in public spaces, because, from their point of view, it is not a civilized behavior to be done in the street.

As a result of their complain, after every event or public festivals, the governorate decides to close a water feature or fence it or get rid of the water and let it dry.



This made me think about having this kind of public services and to integrate some additional elements to convince people to, gradually, accept the idea of playing with water in streets, providing this features helps in reducing the effect of the hot weather on people and it cools the places around it.

It is difficult to change mentalities and try to free minds of cultural restrictions, but the happy moment people and their kids would live by providing these kinds of recreation areas deserves to try more and more.

The new planned urban cities

That is how the planned districts are built in Cairo. Massive exclusive green and golf areas, but empty. High gates for the closed communities, but no communication.

You can't enter these gated communities unless you are a resident or a visitor. The owner should give his visitor a card to be shown to the security at the gate to be able to enter.

So the majority can't enjoy these massive green and recreational areas. It is only exclusive for rich people who don't even use it because it is also a shame to use the public parks, which mean you don't use your own garden.



Types of public spaces in New Cairo

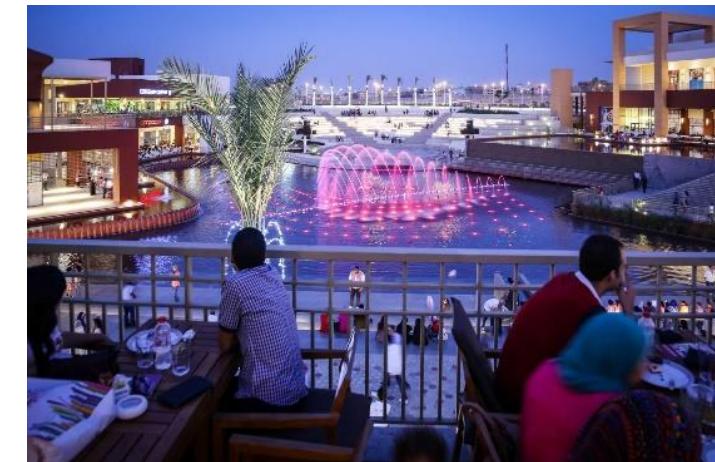
1. Empty and luxury public spaces in closed gated communities. You have to be so rich to be able to use it.

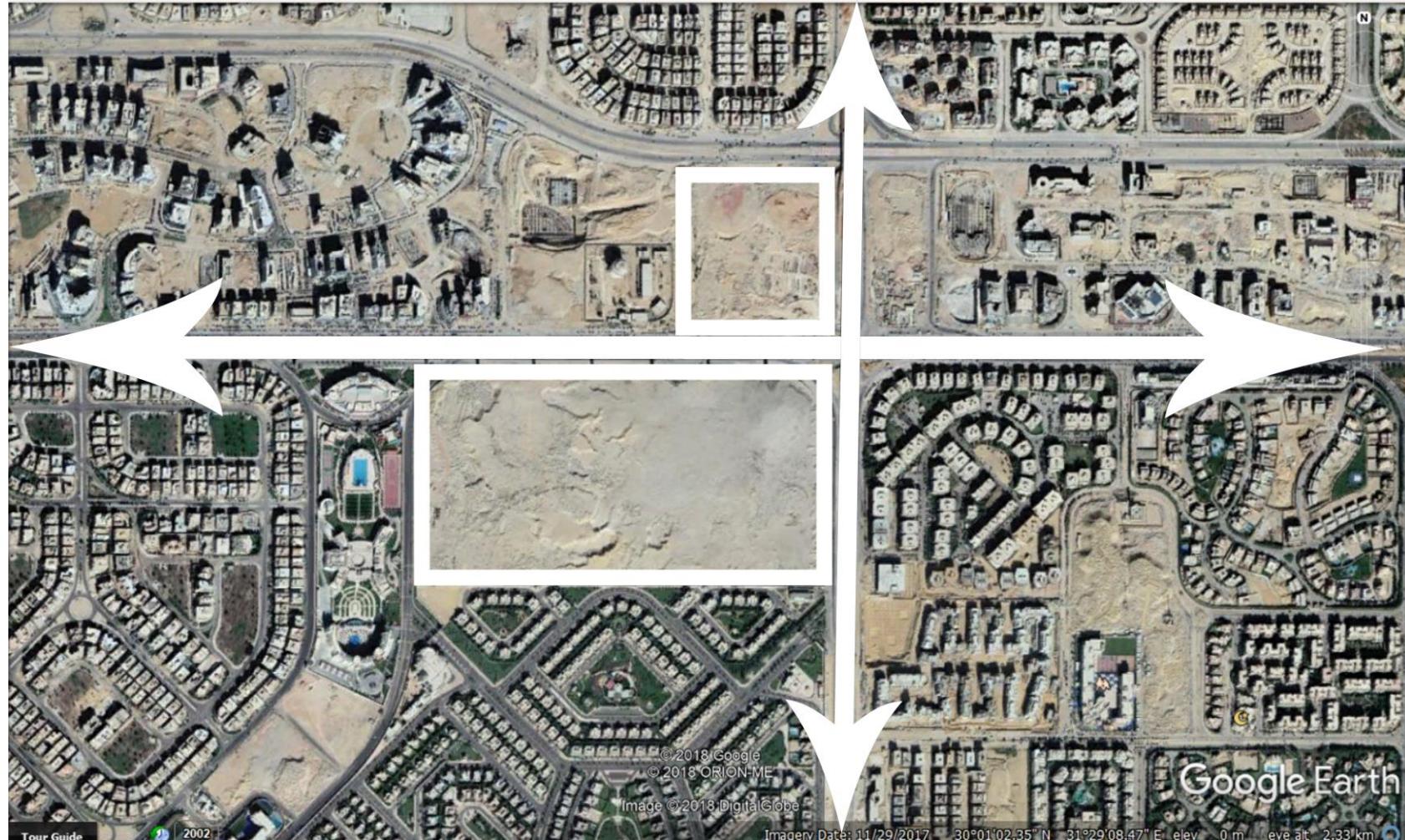


2. Sport clubs and gated parks, where you need to have a membership and pay a deposit and annual expenses to be able to use its facilities



3. Public spaces inside shopping malls. Car is necessary, especially in New Cairo, no pedestrians can reach it. In addition to that, it only provides expensive services, restaurants and brands. The lack of diversity forced so many people not to visit this kind of facilities.



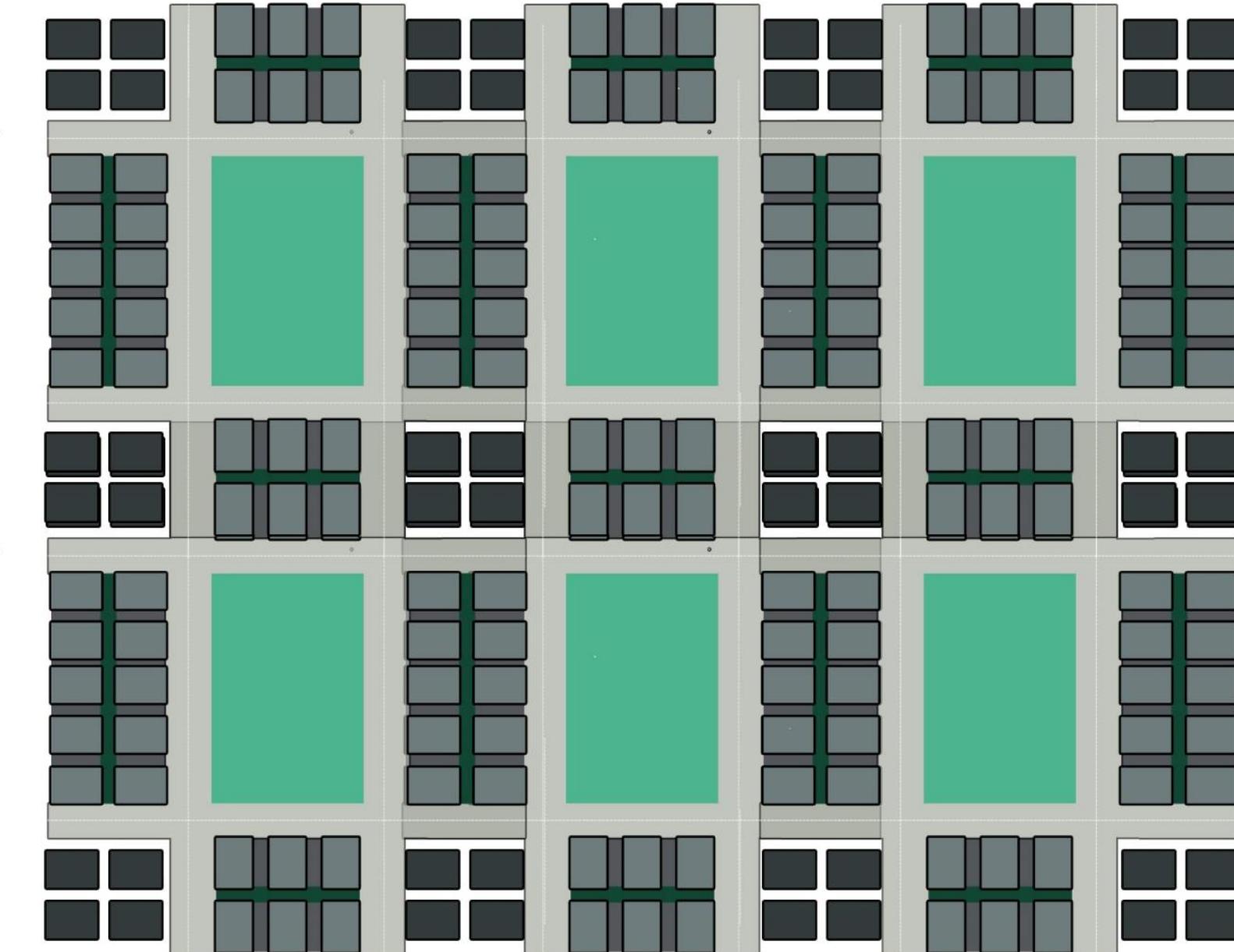


The Site

It is located at the intersection of the most two important axes in the city. The area around my site has been developing rapidly in recent years and months, and is still growing fast. So my project deals with the problems I want to solve and the undergoing developments.

Tesseen street is a high speed street and it plays a role as a barrier between the southern and the northern sides of the area.

The city and street were designed only for cars, so there are no walkable paths except inside the gated communities which is not allowed to be entered except for the residents and their visitors.

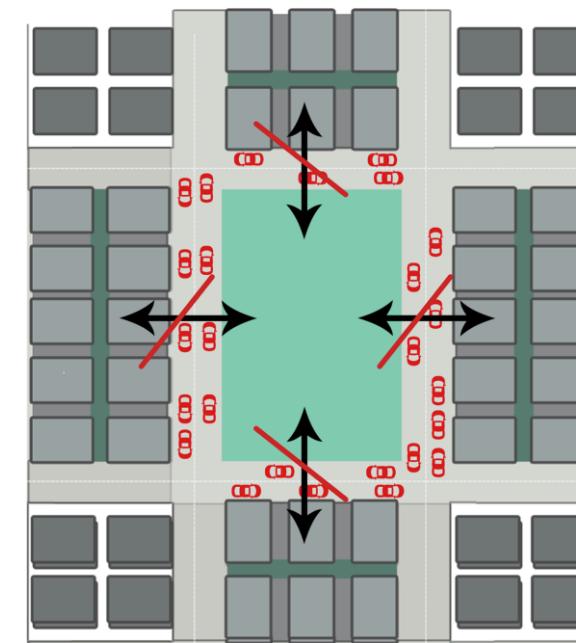


Advantages of the existing typology

1. Typology provides a good view for most of buildings and units which is unusual for many other districts in Egypt.
2. Easy access for each building.
3. Provide car parking in basement levels instead of occupying the streets.
4. Considering human scale, the height of blocks is varied between 3 and 5 stories.
5. 60% for the built up area and 40% services of each land.

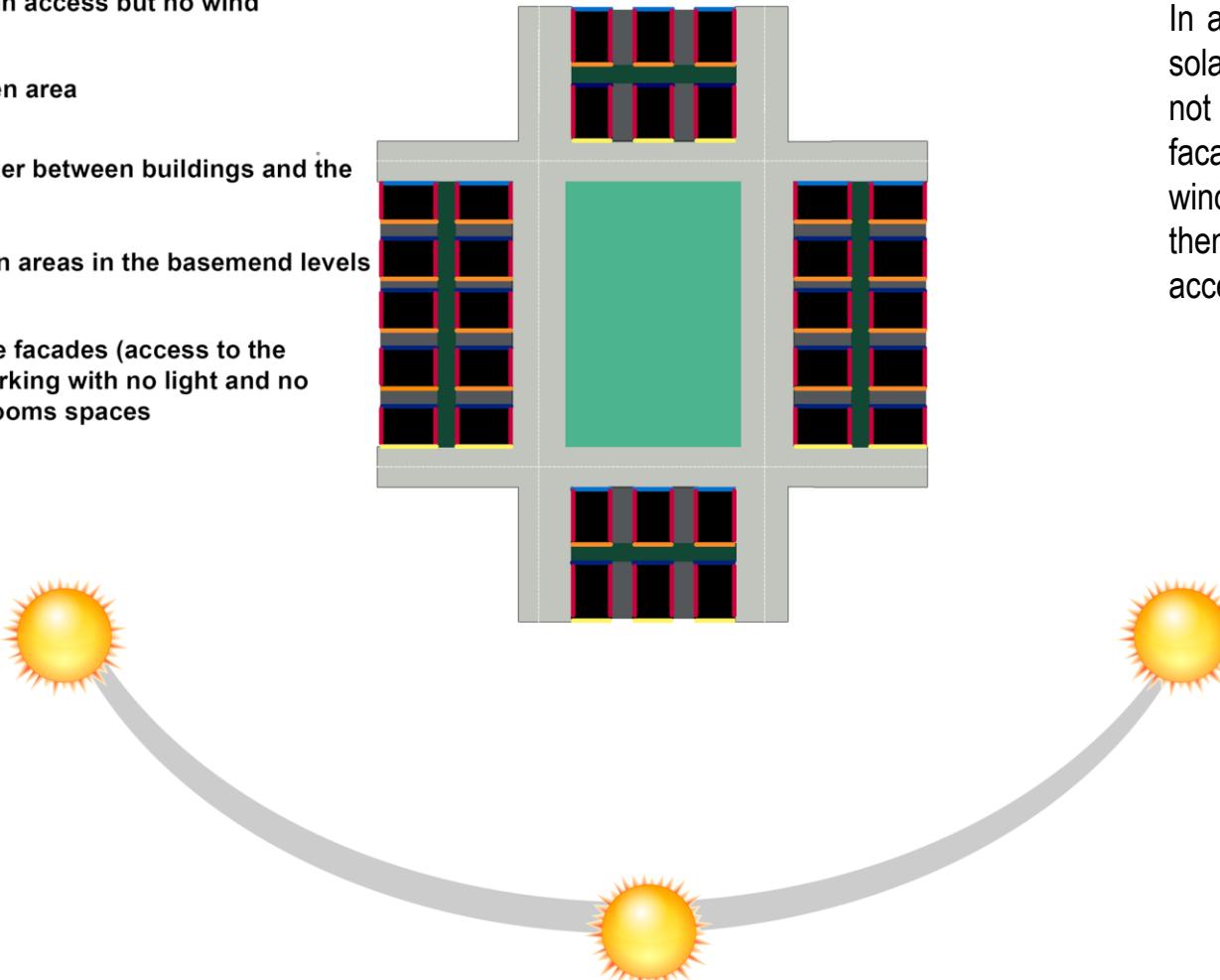


The existing typology Problems:



One of the typology problems in the city is the sub streets between buildings and green areas inside the courtyards, which work as barriers, so residents use it. Provide accessible green areas improve the relation between building and landscape.

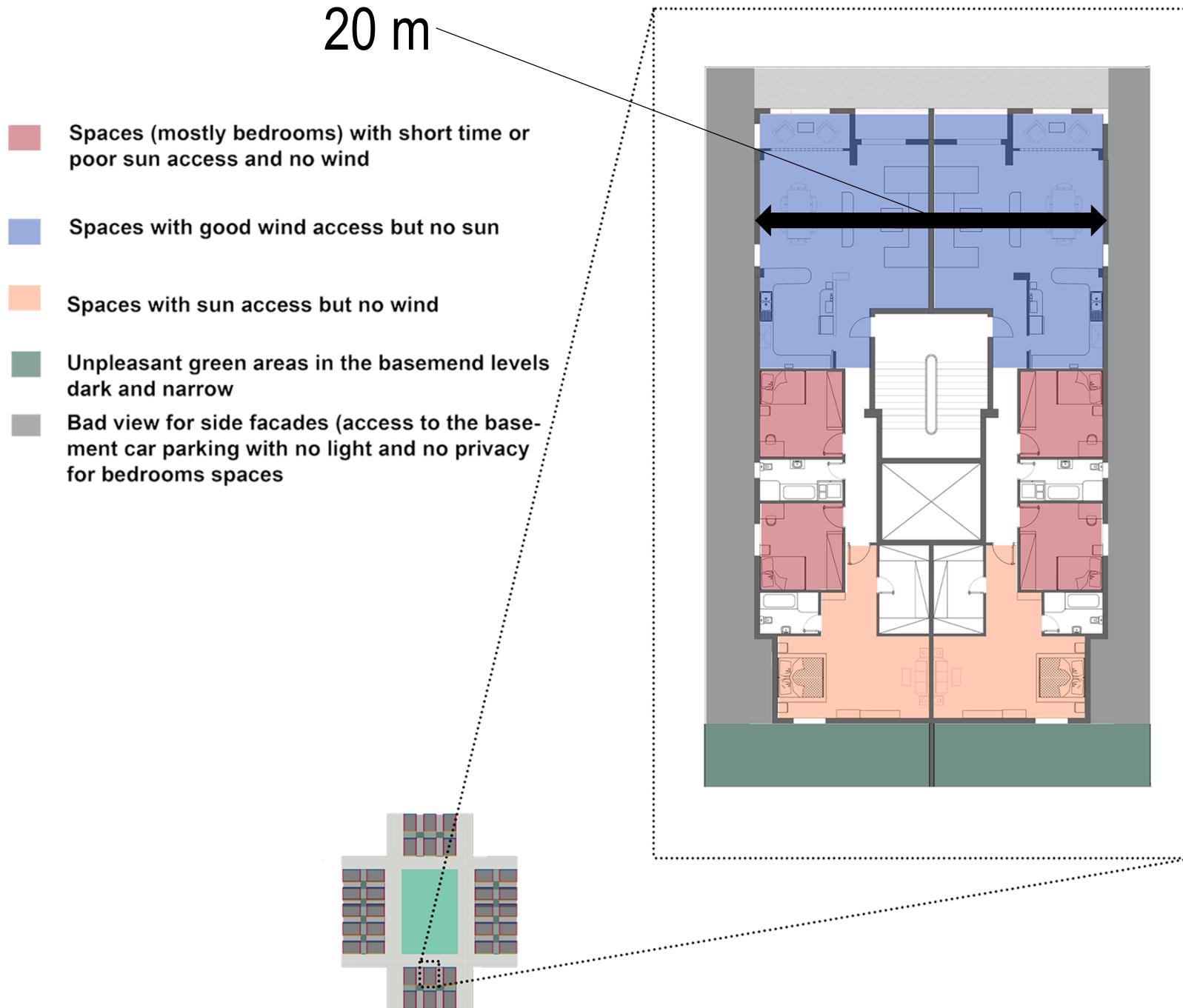
- Facades with short time or poor sun access and no wind
 - Facades with poor wind access and no sun access
 - Facades with good wind access but no sun access
 - Facades with sun access but no wind
 - Facades with sun access but no wind
- Barely used green area
- Car road as barrier between buildings and the green area
- Unpleasant green areas in the basement levels dark and narrow
- Bad view for side facades (access to the basement car parking with no light and no privacy for bedrooms spaces)



The existing typology Problems:

The side facades of buildings are so close to each other which prevent solar and wind access to the indoor spaces.

In addition, the prevailing orientation allow solar and wind access for some of facades not all of it, on the other hand, some of facades only have solar access and no wind access, or the opposite, and some of them don't have either solar or wind access.



The existing typology Problems:

That is an example of units prototype in new Cairo city, shows the result of north south orientation typology and how it effect every indoor space in the unit.

Most of bedrooms with short time and poor solar access and no wind because it doesn't face the prevailing wind direction and it is so close to the surrounding buildings.

Some spaces with sun access but no wind access.

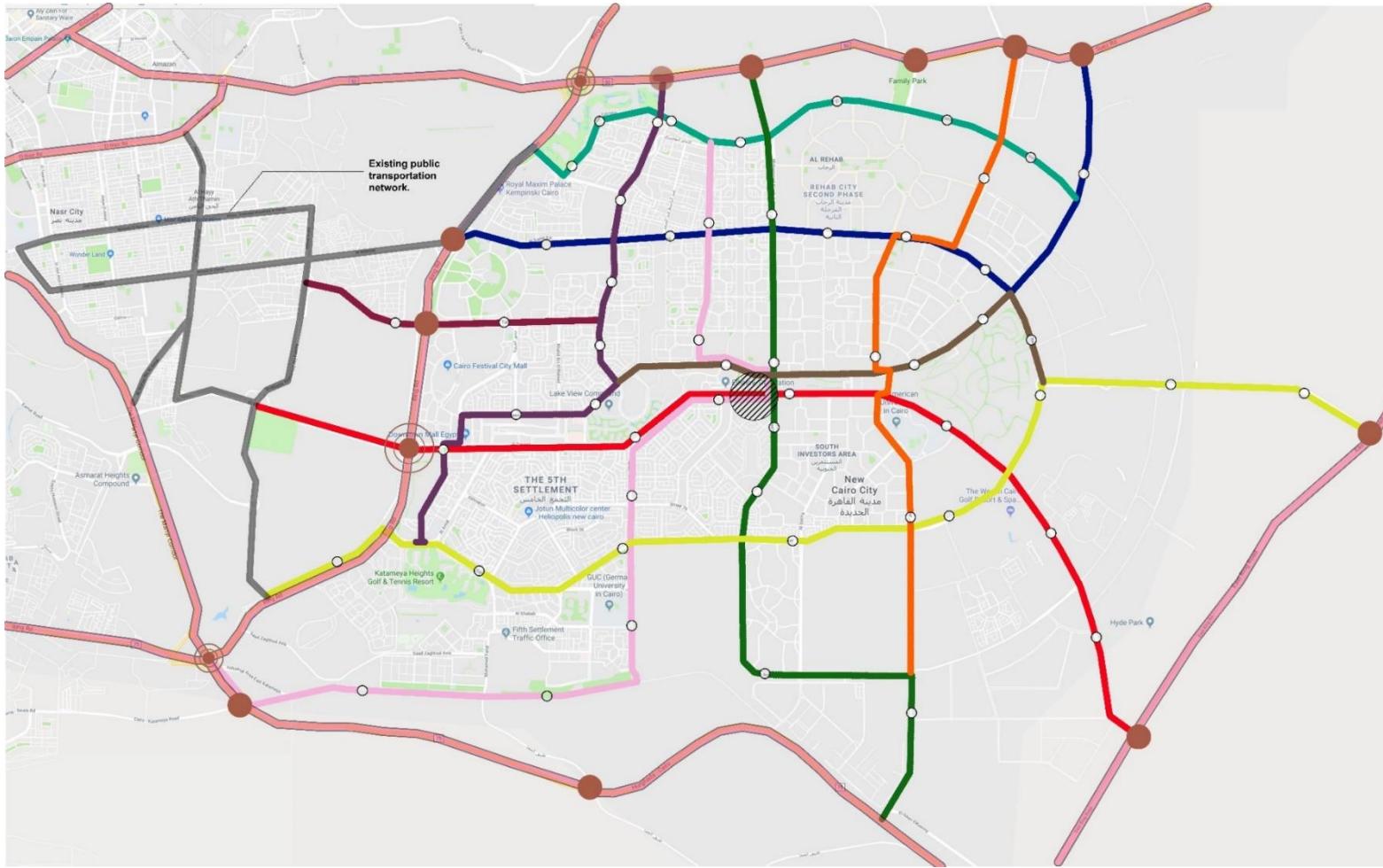
Some other spaces with good wind access but no sun access.

In addition, the unpleasant gardens in basement level, which is dark and narrow, and finally the bad view for the side facades because of closeness of the surrounding buildings.

Strategy

1. The city scale
2. The neighborhood scale
3. The block / unit scale

1. The city scale



Mobility: public transportation

Proposing a public transportation network, which is so weak in the current situation, allows people to reduce using cars. As every family in New Cairo city has from 1 to 4 cars and in some cases they have 5 cars, one for each member of the family, that dramatically increases pollution and consumes huge amounts of energy.

In addition, people who don't have a car will have more chances to move in an easier and cheaper way.

The new transportation system will provide 1.5-2.5 km distance between bus stops to be located at the most active areas, and 10 minutes frequency between buses.

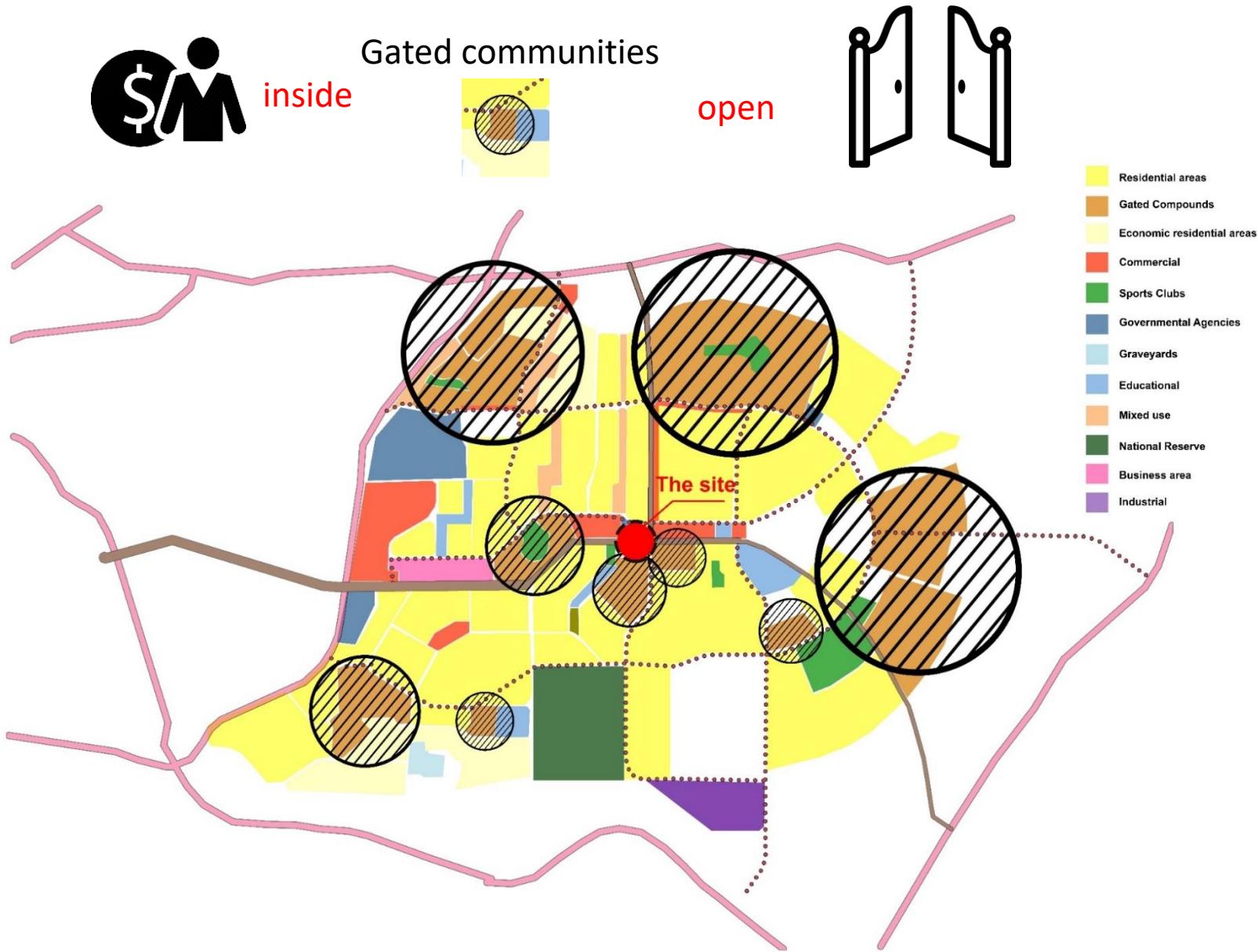


Mobility: Pedestrian and bike paths

Proposing a pedestrian long path in a green corridor and good landscape elements allows people to depend on walking more than transportation or using cars in the daily short distances.

Integrating a long bike path which is a need in New Cairo city and link it to the existing bike path at Ain Sokhna highway, can enhance the individual movements and help reducing crowdedness, especially at the rush hours

2. The neighborhood scale



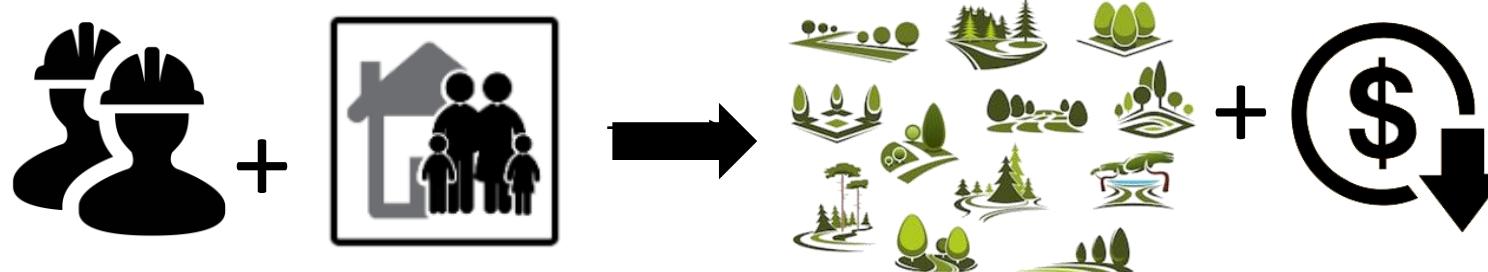
What my neighborhood will present to the city

How to encourage the gated communities to open their doors.

Providing open public urban spaces would encourage people inside the gated communities to open their doors to the outer world, and to communicate more and interact with others.

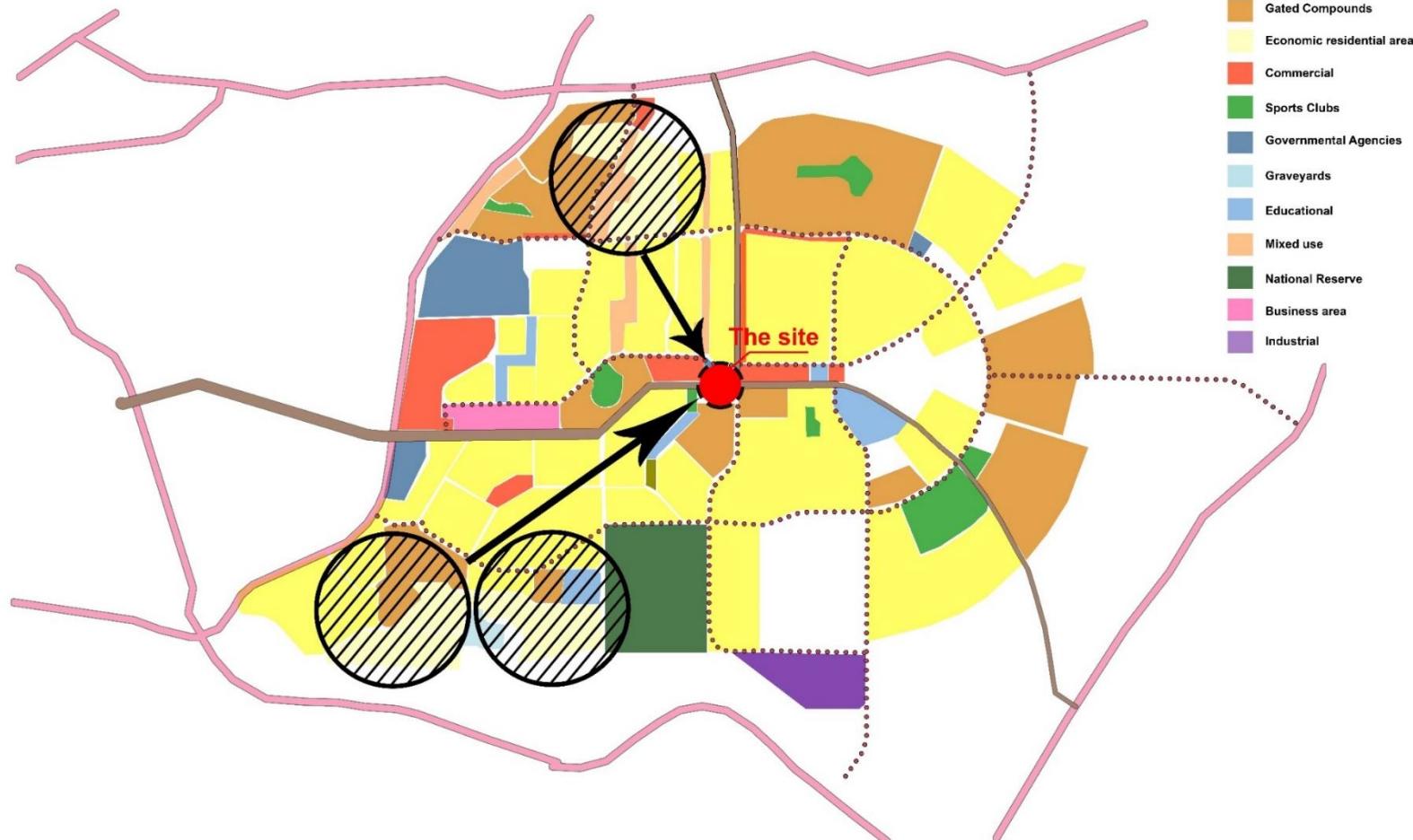
It is not exclusive only for rich people, it is so for all.

Diversity of services and public spaces could make a significant change in peoples' mentality and present a better life style for all classes.



What my neighborhood will present to the city

How to provide affordable public areas for the workers taking part in the city constructions and the lowest section of the middle class living in the city?

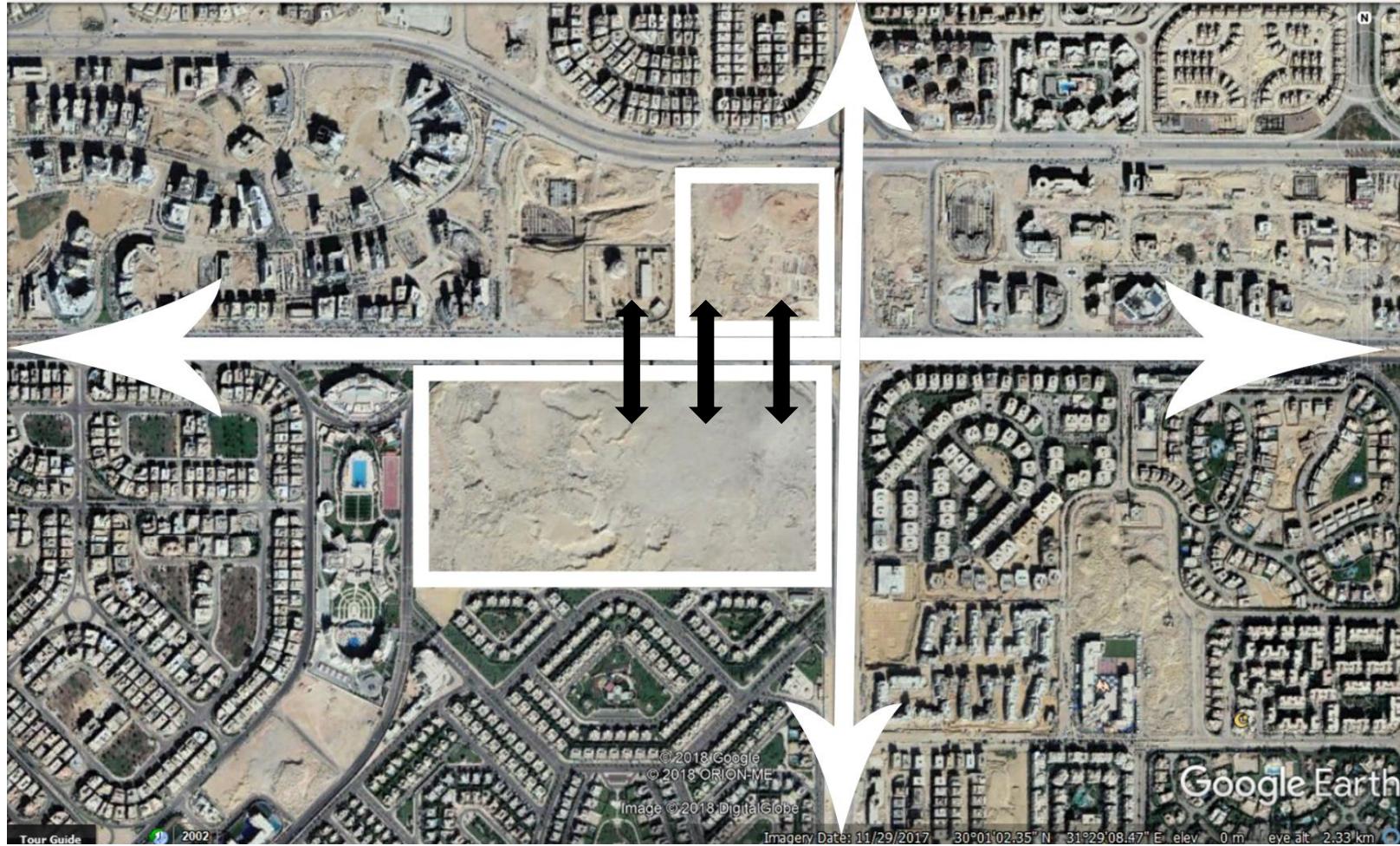


The city has many public areas but unfortunately it is gated and exclusive for the rich people living there, so the workers who participate in the city development on a daily basis for many years and the lowest section in the middle class people, live in three districts. They don't have affordable public areas or cheap services.

The site location is strategic for these three districts, because it is at the center of the city and at the main axe Teseen street so it is easy to reach.



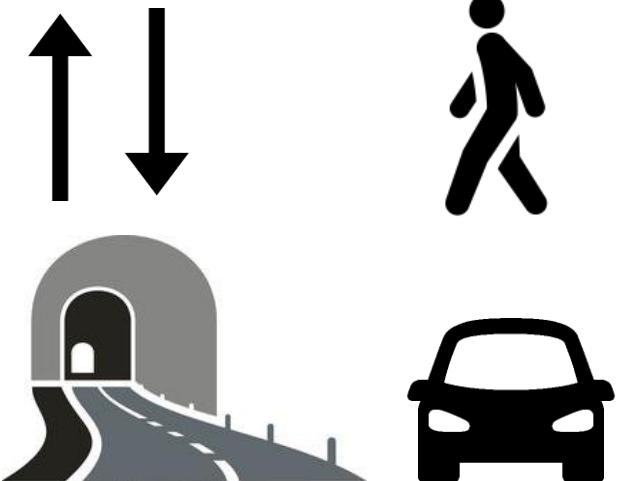
Open Parks
Diverse street services.
Playful water features.
Affordable public spaces.



Connectivity between the southern and northern sides of the city

Break the high speed street barrier between the two sides of the city, by providing a pedestrian connection and move the continuity of the street to a lower level of the street to be a tunnel for cars. This would make it easier for people to move through the city by walking or by bikes.

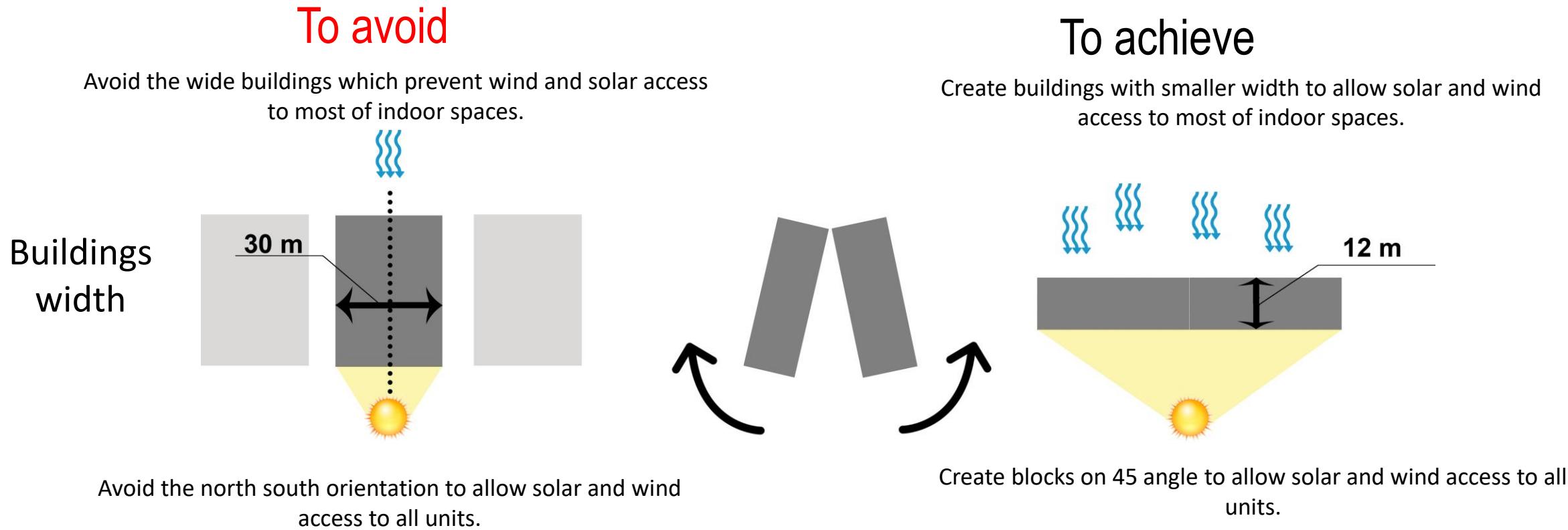
It would be the only connection between both sides of the city. This will reduce the traffic accidents which is in a high rate in the current situation.



2. The block / unit scale

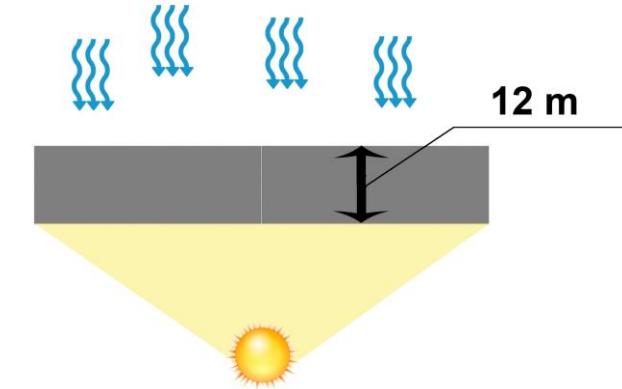
To avoid

Avoid the wide buildings which prevent wind and solar access to most of indoor spaces.



To achieve

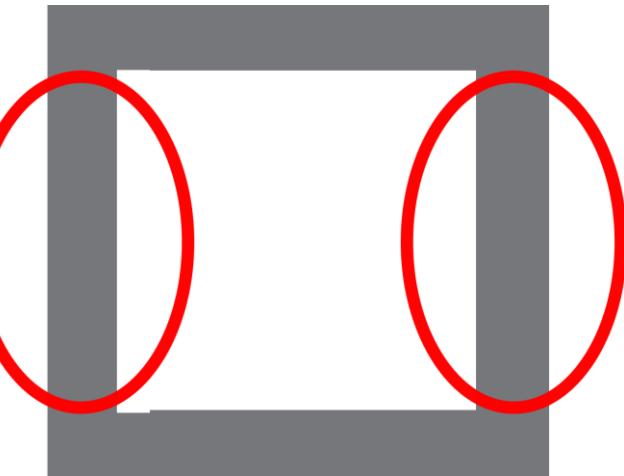
Create buildings with smaller width to allow solar and wind access to most of indoor spaces.



Create blocks on 45 angle to allow solar and wind access to all units.

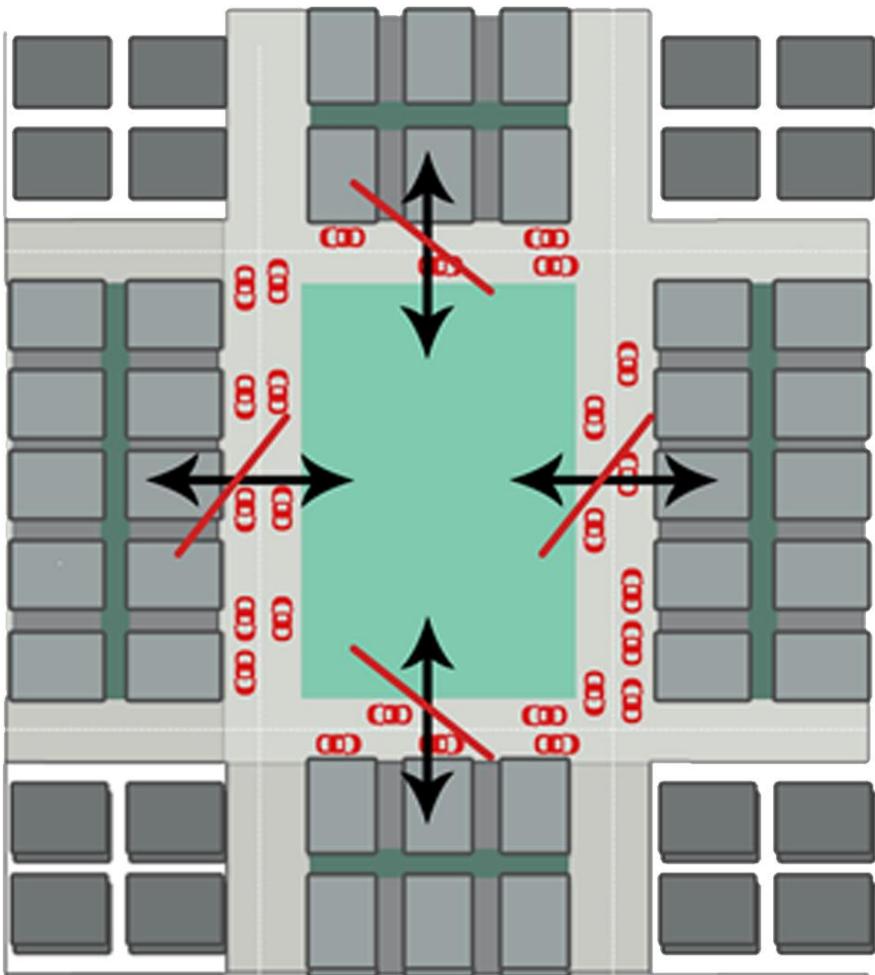


Orientation



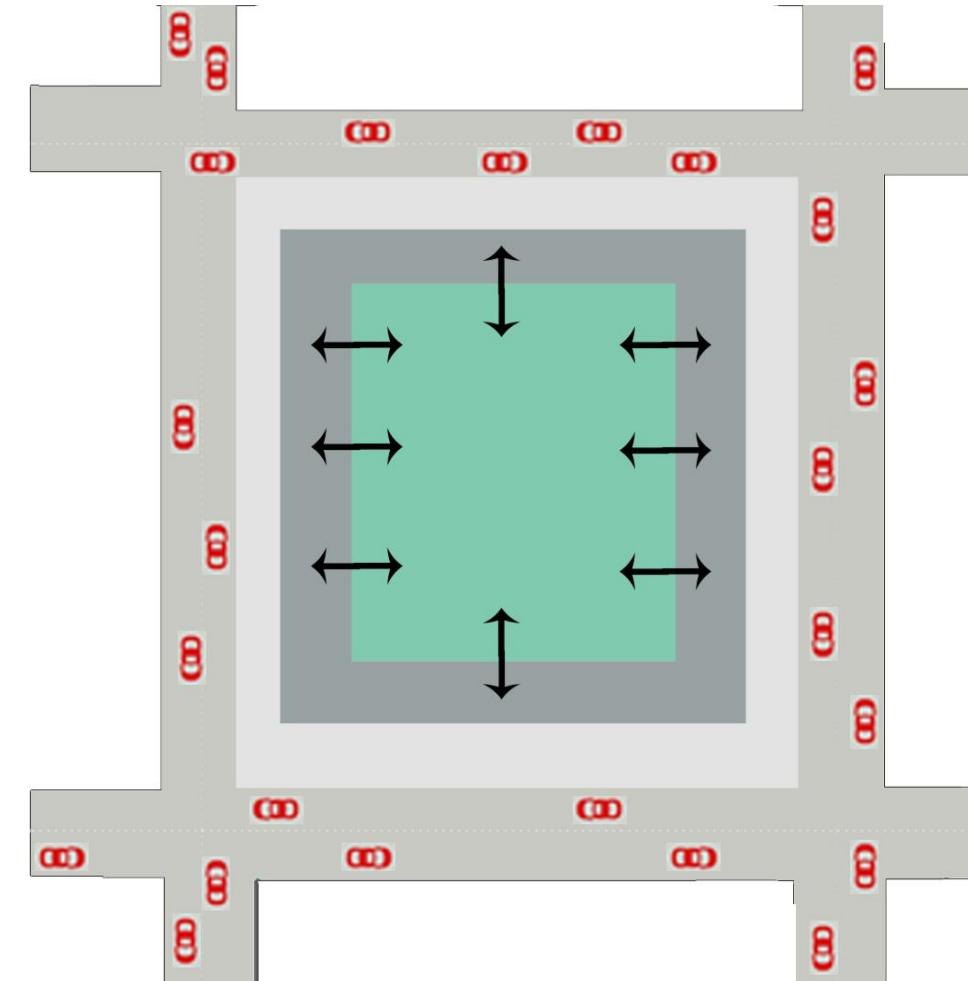
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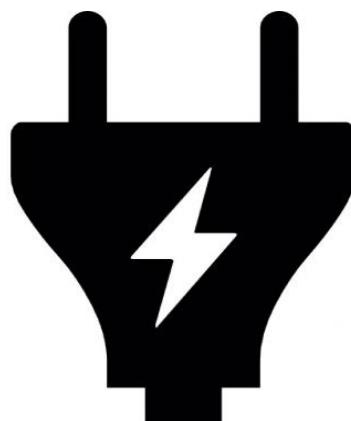
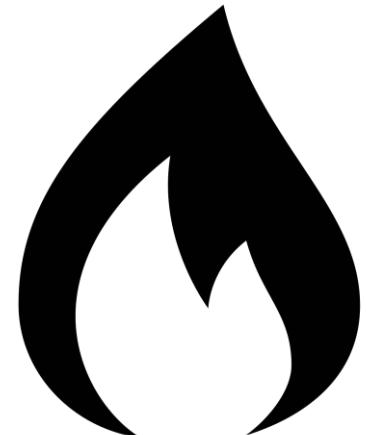
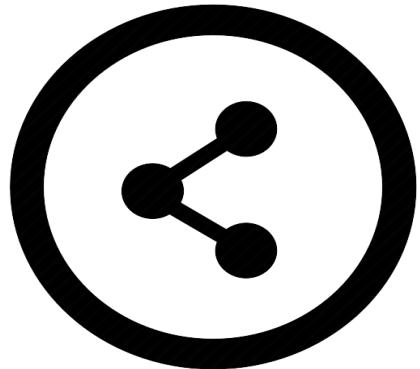
The sub-streets barrier between buildings and landscape



To achieve

Move the streets out of the courtyard and create accessible landscape, providing different activities inside it



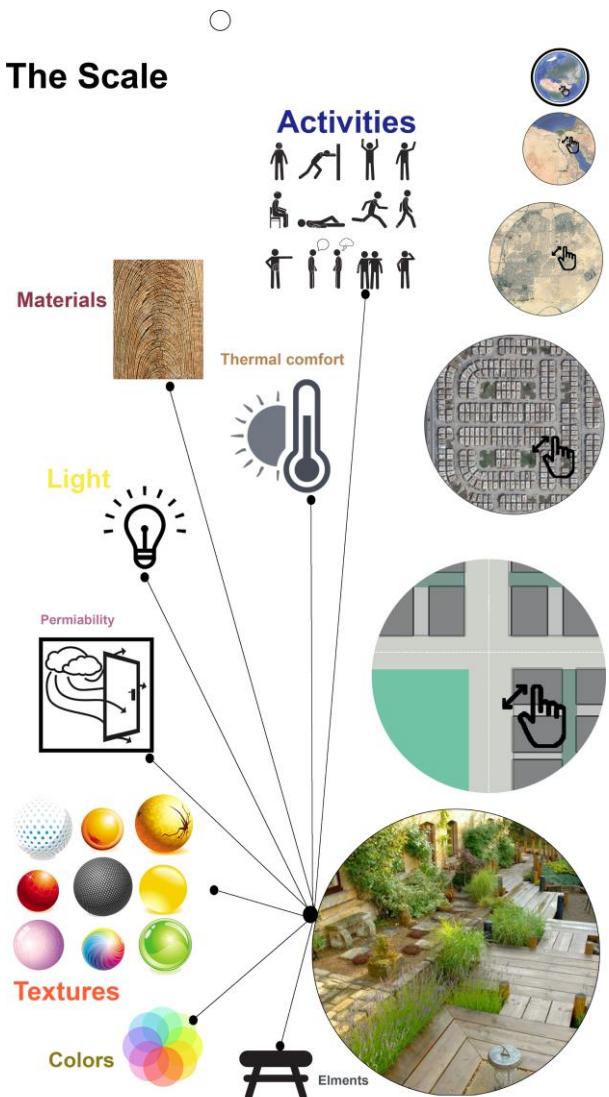


Multigenerational Family houses

Support the common tradition in Egypt to have multigenerational houses where relatives can live together in one big house and share the annual expenses of gas, water and electricity, they can also share food and easily use carpooling which will affect reduction of car users and save energy.

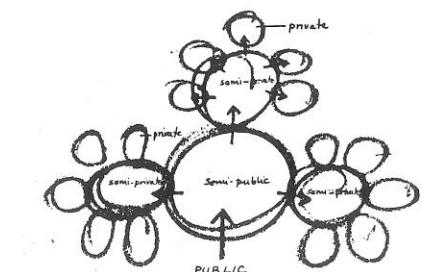
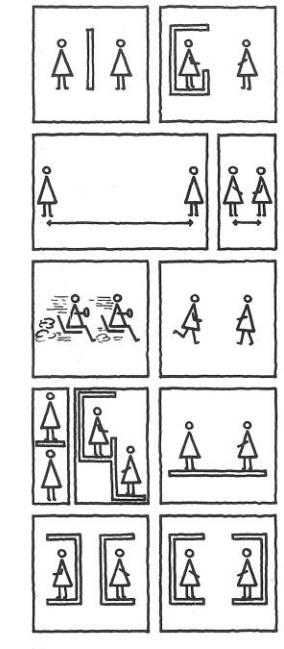
The scale:

getting into details and the small scale urban areas which affect peoples' interaction with their outdoor private areas and courtyards, working on kind of activities, materials, permeability, varied elements, would affect how good environment could the design present.



Transition areas:

learning from literature, how important transition areas are , how it plays a significant role on peoples' interaction and communication, how the links inside out control peoples' life at the semi private areas.





Transitions in slums and countryside -Egypt

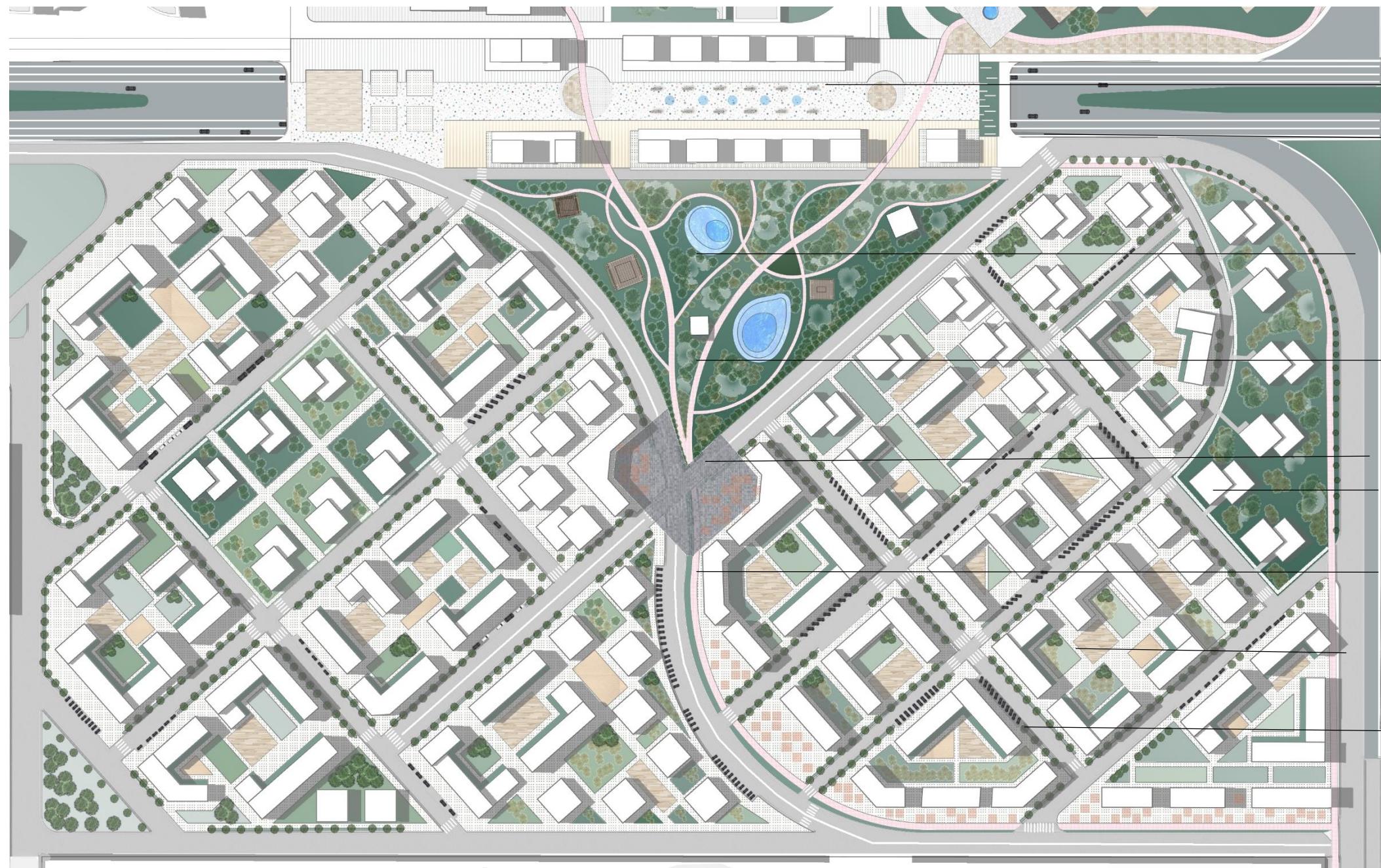
Unconsciously, people give an important role for transition areas in slums and countryside in Egypt, where they can communicate more with their neighbors and do a lot of their daily activities.

Proposal

Master plan



**Residential area of
10000 residents**



Open shopping area

Car tunnel

Open Park

Pedestrian and bikes
paths

Public square

Family hoses

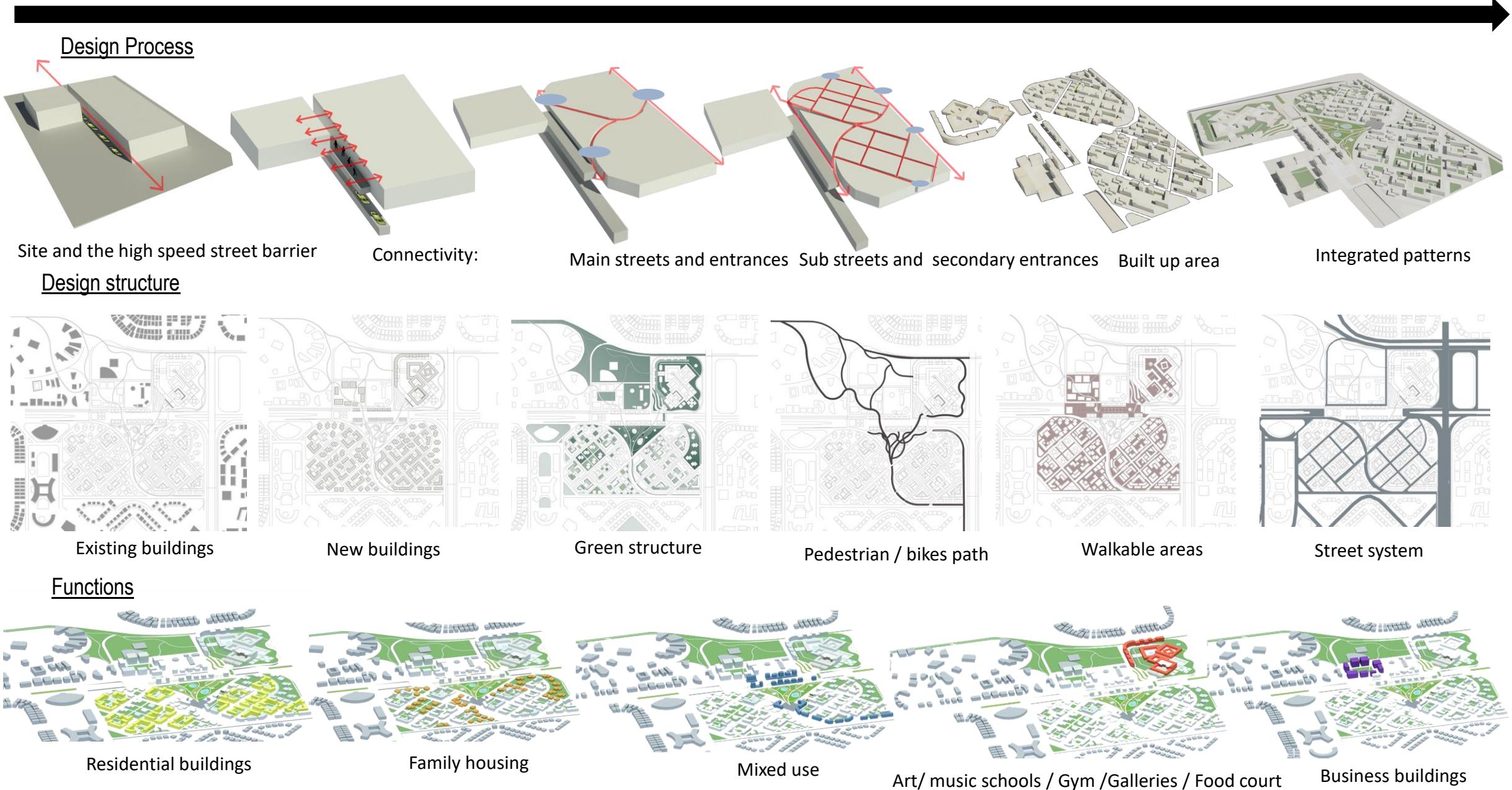
Mixed use street

Accessible
courtyards

Visitor's parking

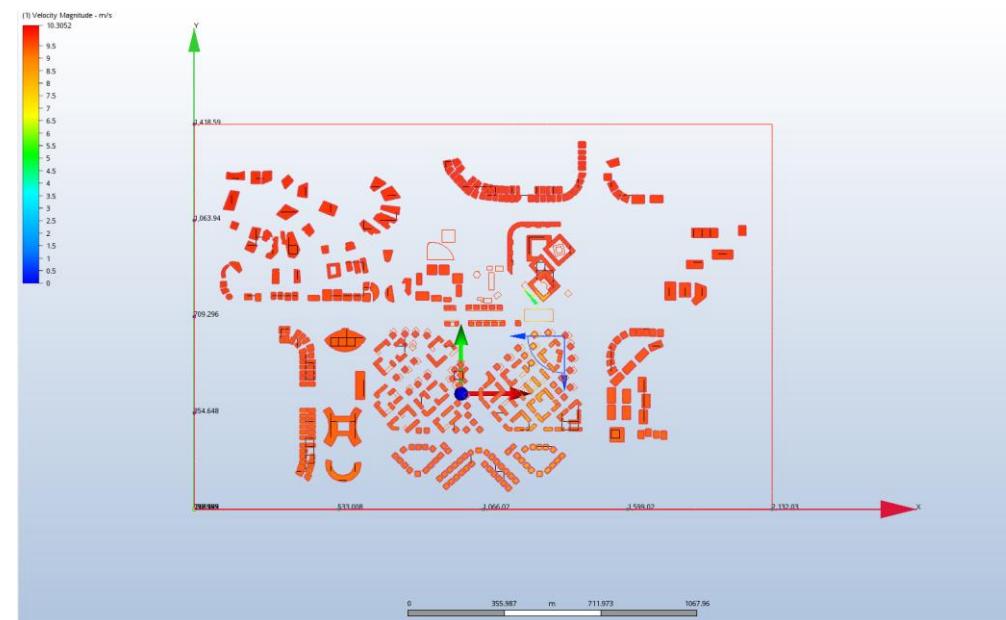
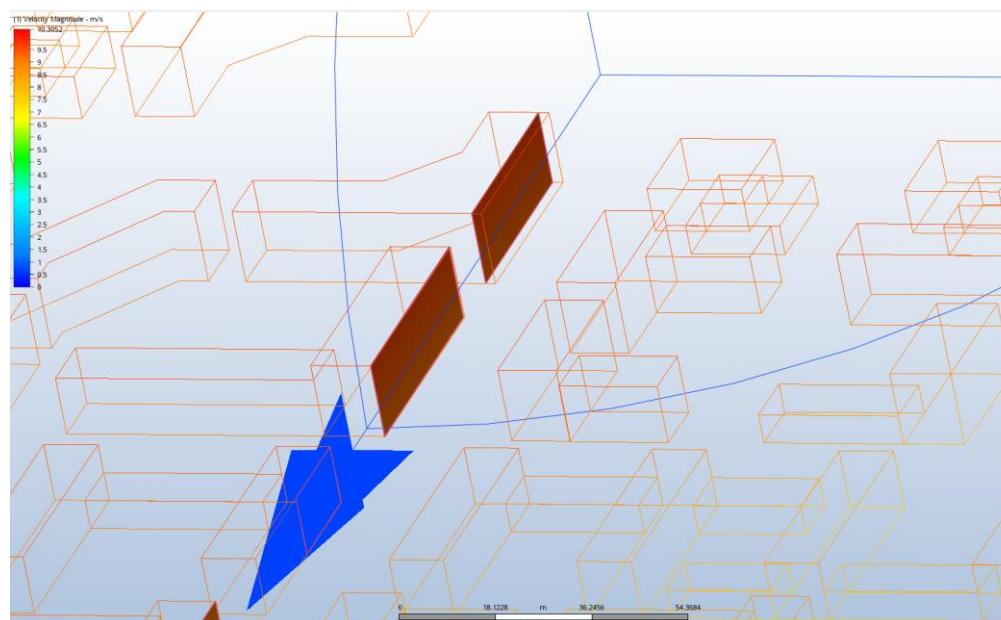
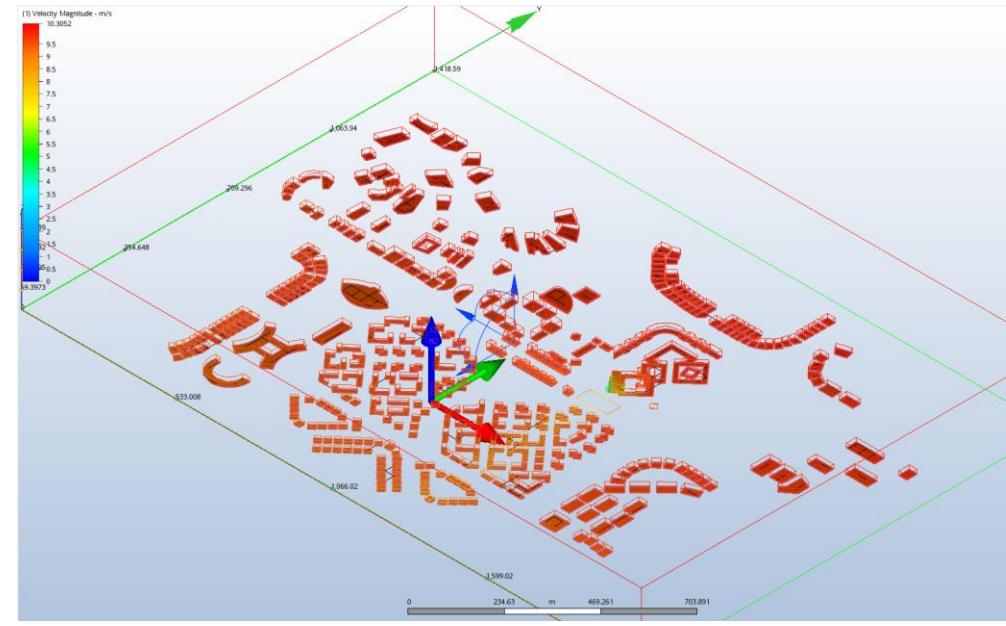
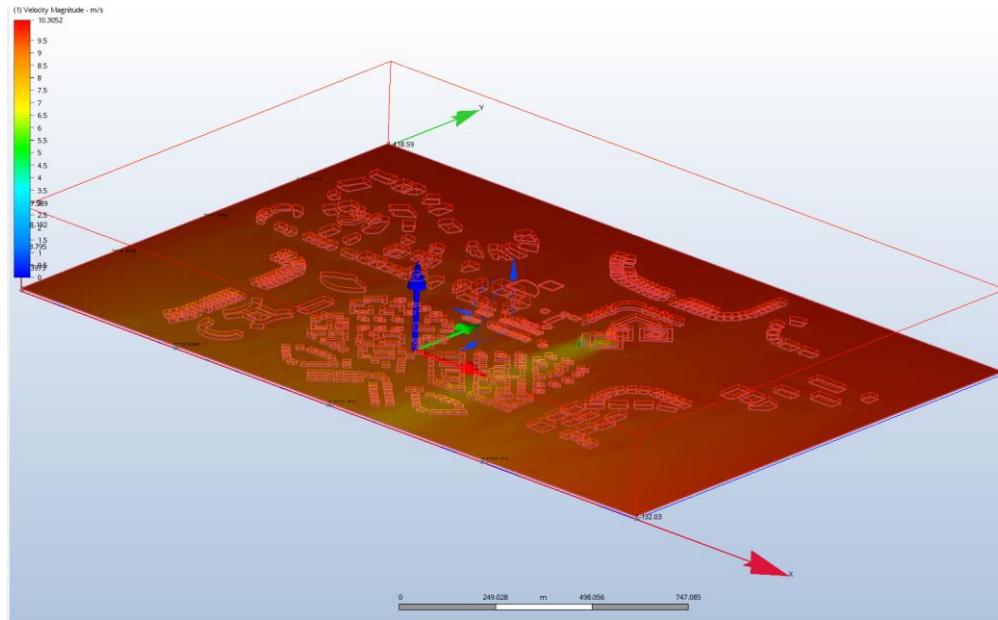


Public services



Wind analysis

According to 45° angle orientation of all residential and most of public buildings allowed the most advantage of wind access.

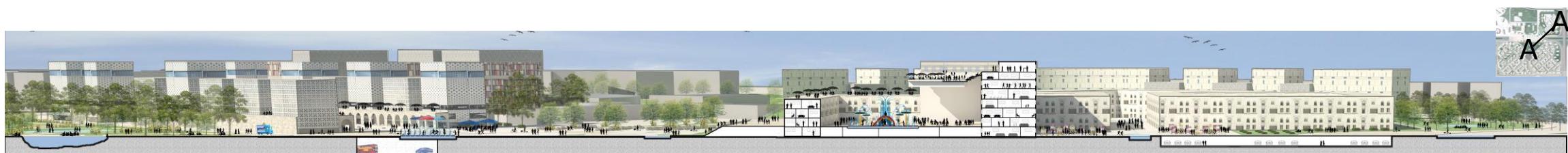
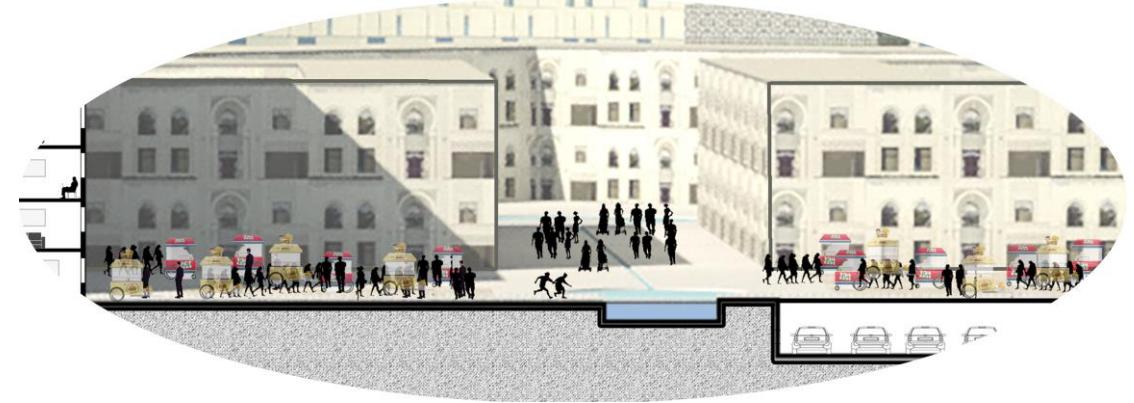
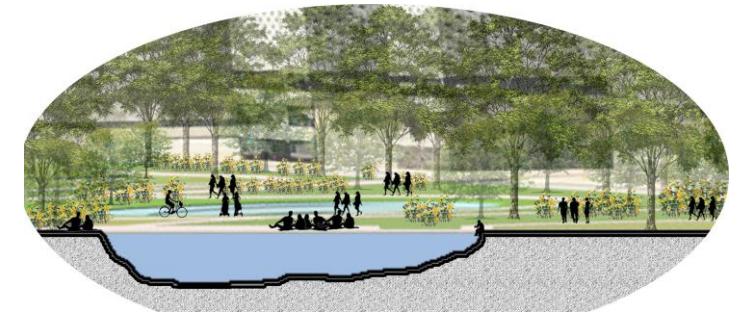
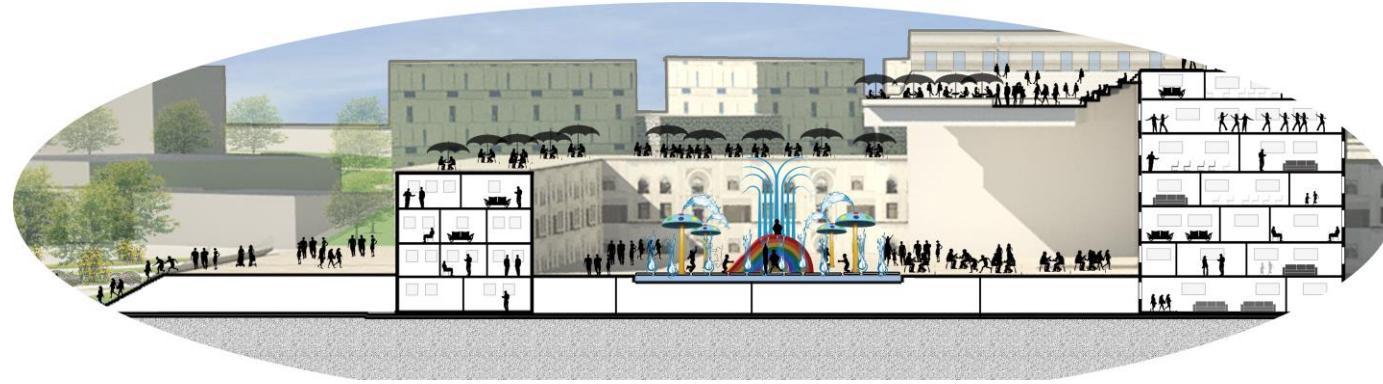


Bird eye view



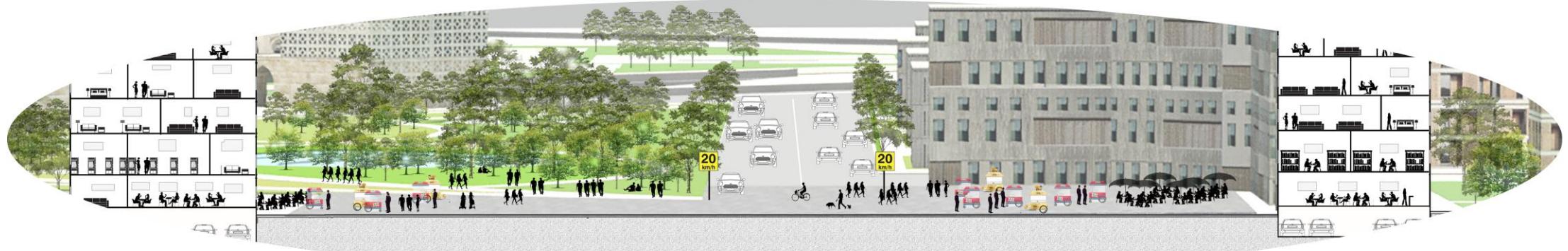
Section A-A

Through the public services and park

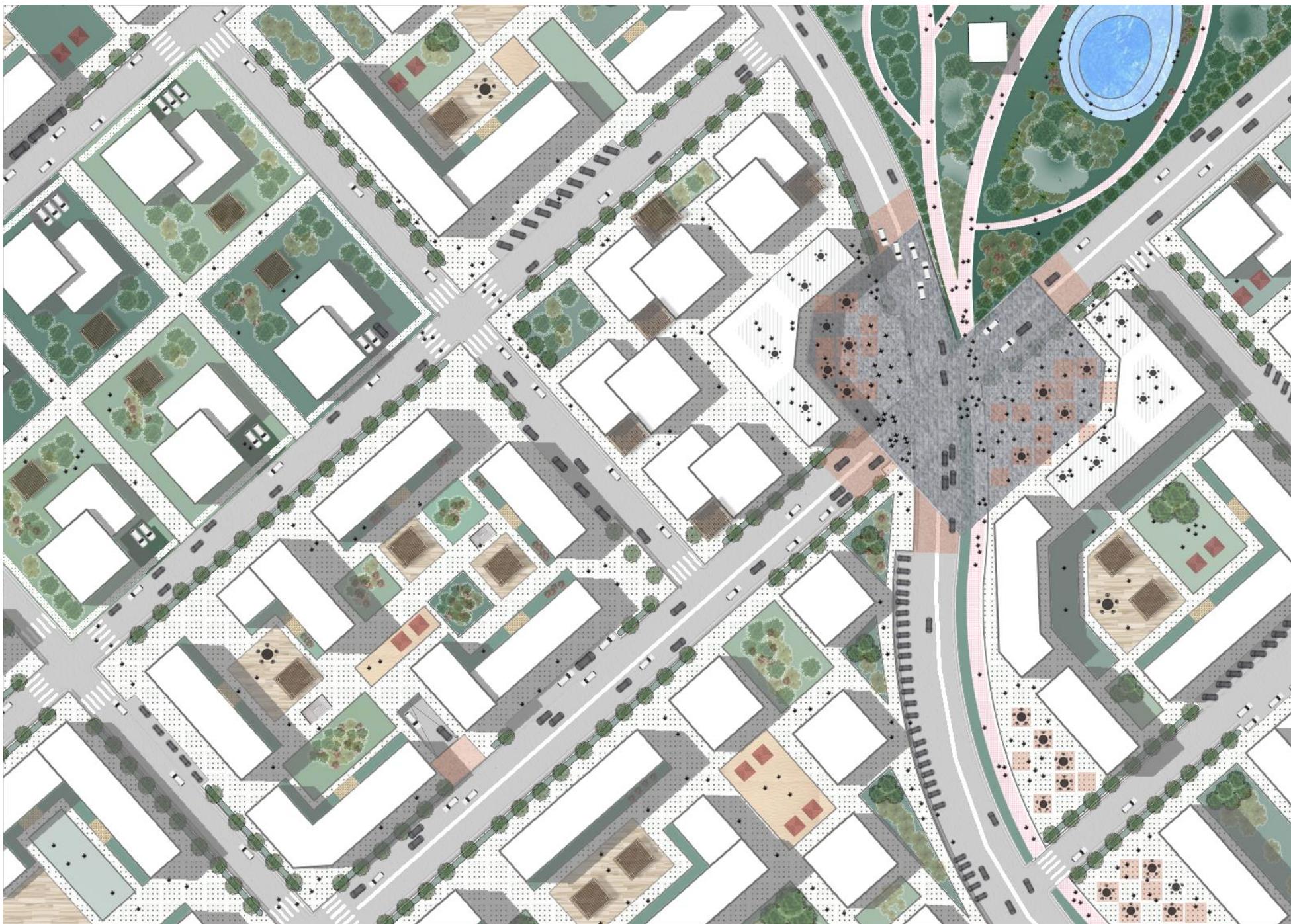


Section B-B

Through the residential areas and square

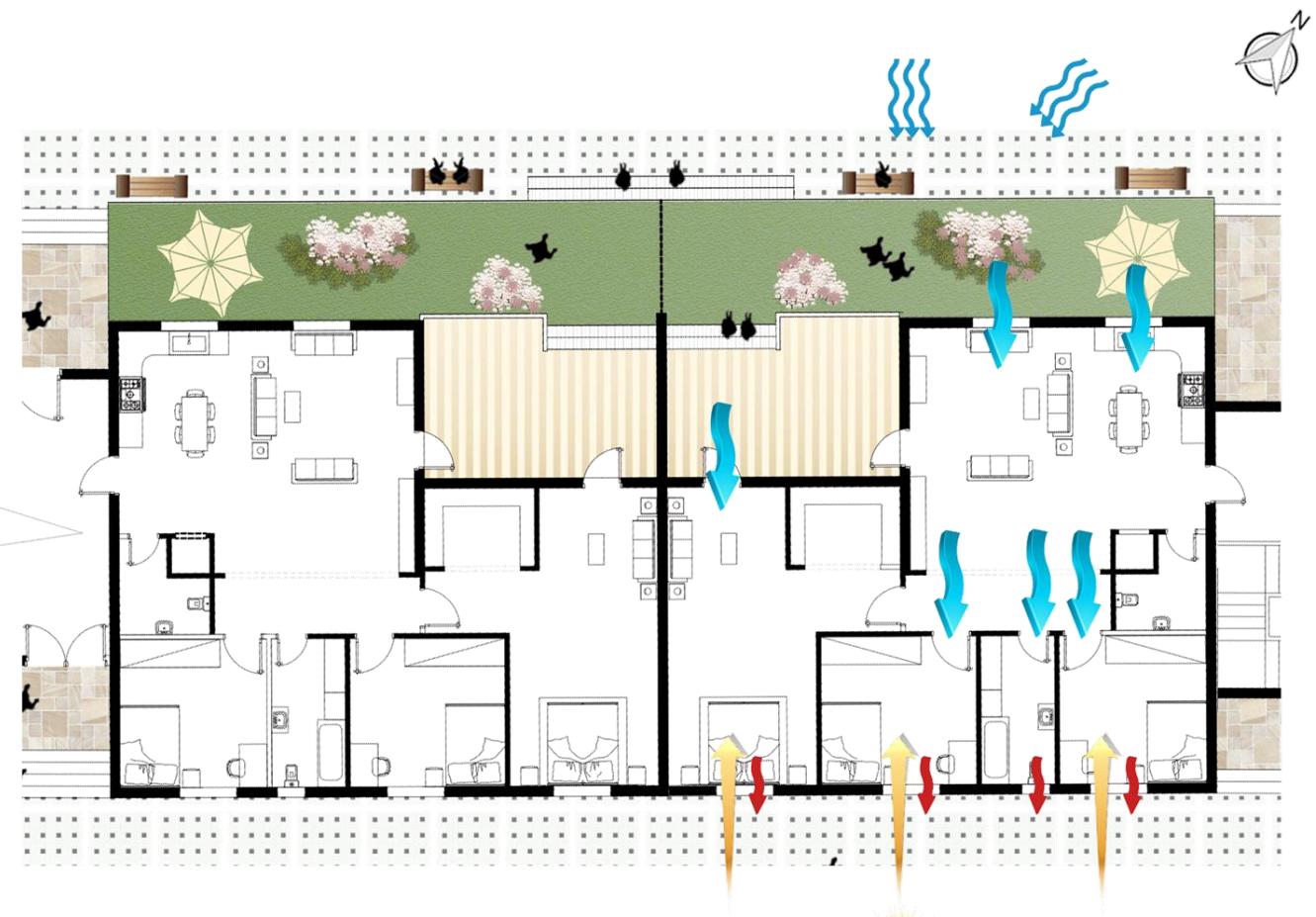


Detailed design

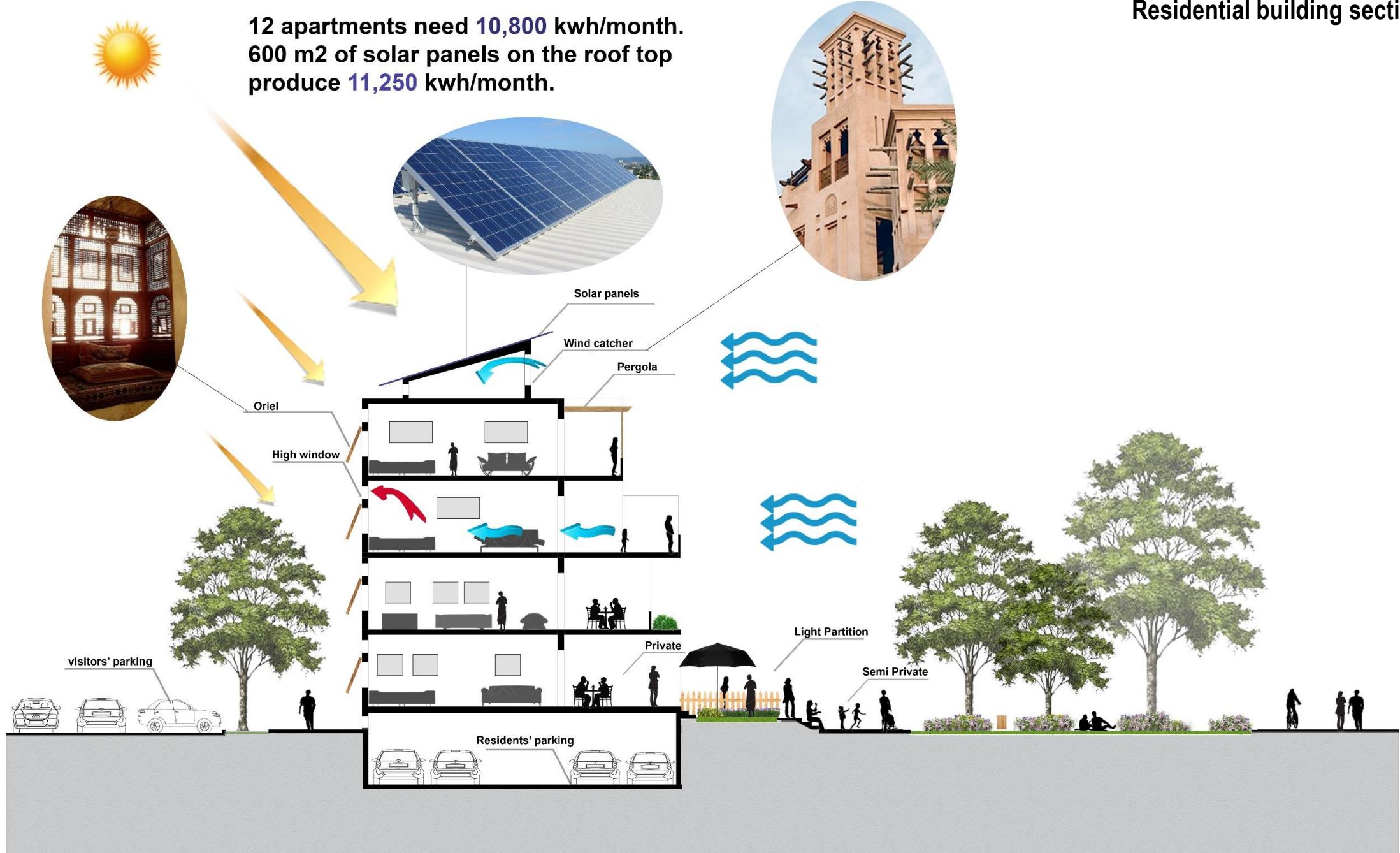


Focused area

Courtyard / unit design



Residential building section



Courtyard perspective



Mixed use street perspective



Park view



Business and shopping area view 1



Business and shopping area view 2



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- Fences, private and public spaces, and traversability in a Siberian city
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- Human movement in Public spaces: The use and development of motion-oriented design strategies
Liselotte Vroman & Thierry Lagrange
- Interior-exterior connection in architectural design based on the incorporation of spatial in between layers. study of four architectural projects
Hristina Krstić¹, University of Niš, Faculty of Civil Engineering and Architecture, Niš, Serbia
Annalisa Trentin, University of Bologna, Department of Architecture, Bologna, Italy
Goran Jovanović, University of Niš, Faculty of Civil Engineering and Architecture, Niš, Serbia
- Sustainable urban street design: Evaluation of Al Moaez Street, Cairo, Egypt.
Hisham Galal Elshimy, Riham Aly Ragheb
- On the development of an urban passive thermal comfort system in Cairo, Egypt
Mohamad Fahmy a,b,* , Stephen Sharples a,1
- Perception, experience and the use of public urbanspaces by residents of urban neighbourhoods
Nataša BRATINA JURKOVIĆ