



LUND UNIVERSITY



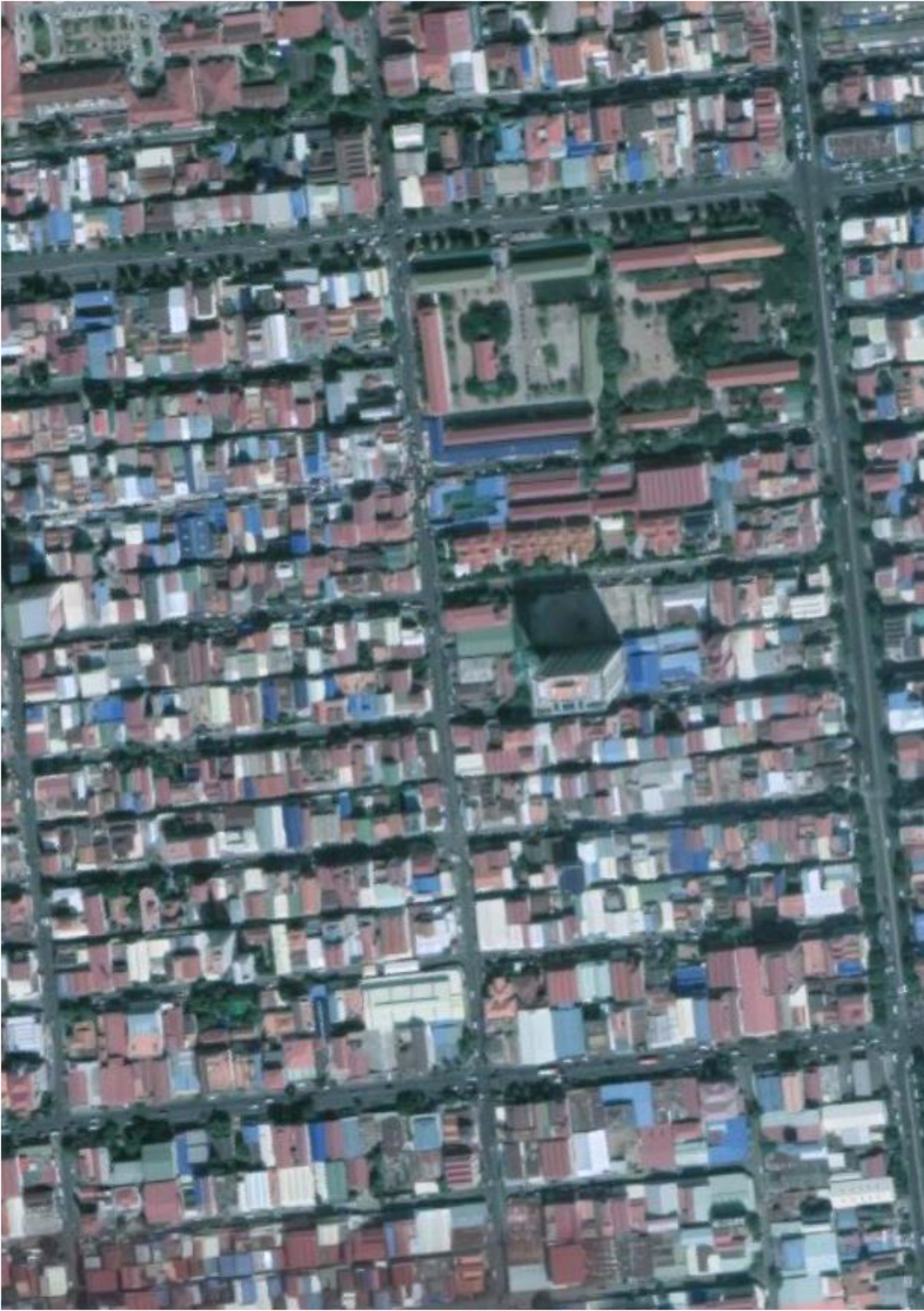
inCLUSIVENESS


FROM GATED TO CONNECT COMMUNITIES



Bunheng Phon

Sustainable Urban Designs (Spring 2019)





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(Spring 2019)
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Aim:

The aim of report is to rethink the current trend of urban development of wall community and try understand the function of this gated in order to improve neighborhood connection, people interation while trying to deal with urgent flood issue.



Guiding Project Questions:

- Does the current urban trends of Gated Community is a right way to go for Phnom Penh development?
- What can we do to improve the housing development trends in the Capital?
- How to deal with urgent urban issues that the city is currently facing?



ECONOMICS

Textile, Tourism,
Agriculture



181,035 km²

(25 Provinces)



16 millions

Country Population



22°C - 35°C

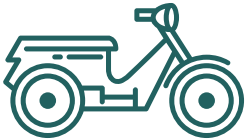
Tropical Weather



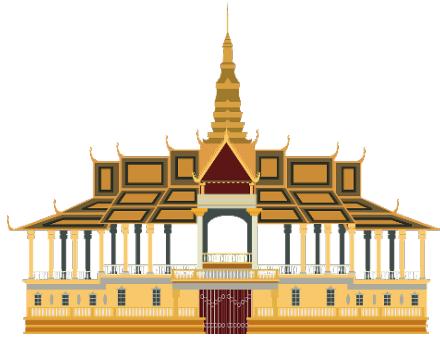
680 km²
(12 Districts)



commercial interest:
garments, trading,
small&medium en-
terprises



TRANSPORTATION
Mortorcycle, Tuk
Tuk



PHNOM PENH



2.4 millions
Capital Population



Architecture
Khmer Style, French
colonies, modern

GEOGRAPHY:

Cambodia located in Southeast Asia, sharing border with Thailand, Vietnam and Laos. This small country has one of the biggest lake in the world.

The site is choosen in Phnom Penh captial, which lie on the cross 4 mains water streams among Mekong river, Tonle Sap lake, Lower Mekong and Bassac river.

DEMOGRAPHY

Going through sequence of war, Cambodian experience bubble population growth. In current year 2019, Cambodian population is around 16 millions people while the capital share up to 15% of the total number with 2.1 million people.

CLIMATE:

Less than 1000km north of equator, the climate in Cambodia is dominated by monsoons, which known as tropical weather of two seasons, rainy season and dry season. The temperature vary from 20°C to 38°C with average temperature of 29°C. This permanent hot weather effect the way people live, lifestyle, architecture and urban design. In the hot and humid weather, the thermal comfort for people is to have wind and being in indirect sunlight.

ECONOMICS:

In just recent year 2016, Cambodian has just make a leap from the least developed country to a lower middle income country. The conomic base of the urban area are commercial interest of garment, trading and enterprise. The rural people still depend on agriculture mainly rice and rubber production.

FLOOD AND RIVER:

Cambodian experience the extreme precipitation amount throughout the whole year particularly in rainy season. Phnom Penh situate on the 4 junctions of rivers making the spot in higher risk of flooded during rainy season.

TRANSPORTATION

Public transportation is still rare comparing to neighboring countries(Thailand and Vietnam). However, currently, there are 15 bus lines in the cities and 1 train line from Airport to City center.

The most common and convenient transport is motorcycle although car is becoming more popular. The popular mode of taxi is Tuk Tuk.





PHNOM PENH URBAN TIMELINE

Pre-Protectorate 17th- 1863	<ul style="list-style-type: none"> - Fishing village, traditional planning with different ethnical villages, Khmer, Chinese, Vietnamese, Cham etc.. - Wooden constructions
Protectorate (colonial) (1863-1953)	<ul style="list-style-type: none"> - Modern planned city with grid system Some rise of European urban scape and diverse ethnical districts - New brick and concrete construction
Independent (1953 – 1975)	<ul style="list-style-type: none"> - New government institutes - Vast urban expansion and social housing - More complex archetype introduced as part of urban development - Concrete is widely available for new construction
Genocide (1975-1979)	<ul style="list-style-type: none"> - Ghost city, people are evacuated to the countryside - Destruction on city structure
Back Home (1979 – 1993)	<ul style="list-style-type: none"> - Slowly moving back to the city - Establishing the city system from scratch - Living as community rather than private

Living in city structures with stone houses of several stories were not the type of life people used to live. The city got into form once French colonise the country and start with new system of urban arrangement of grid structure. This latter on give the step to Phnom Penh to extend by itown with French reference style. However, city expansion experience fluctuate growth due to instability political issues and chronic civil war.



1920



Boeung Keng Kang

1937



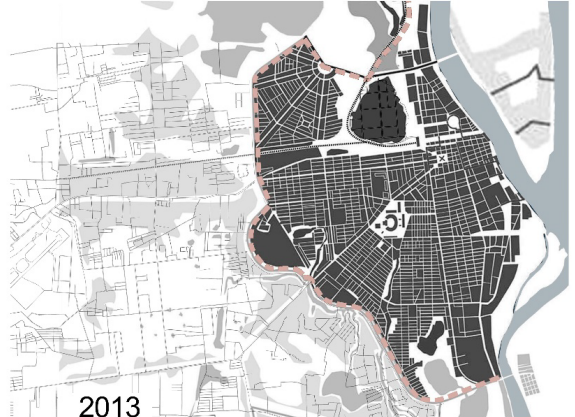
1958



1843



1968

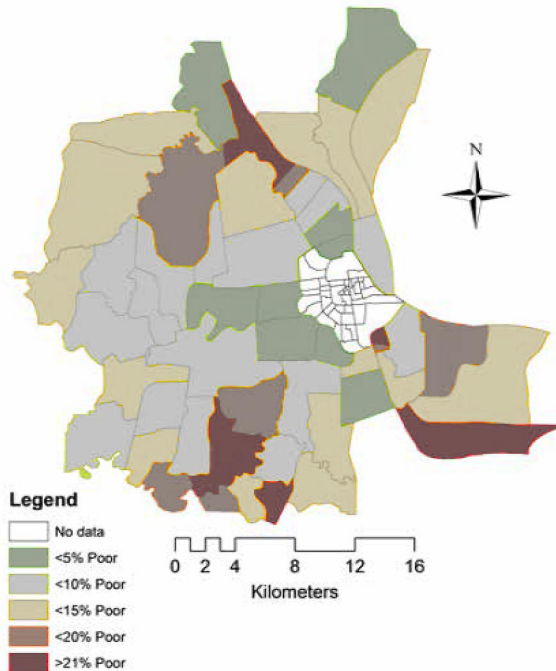


2013

URBAN CHALLENGES

1. RISE OF POOR URBAN SETTLEMENTS

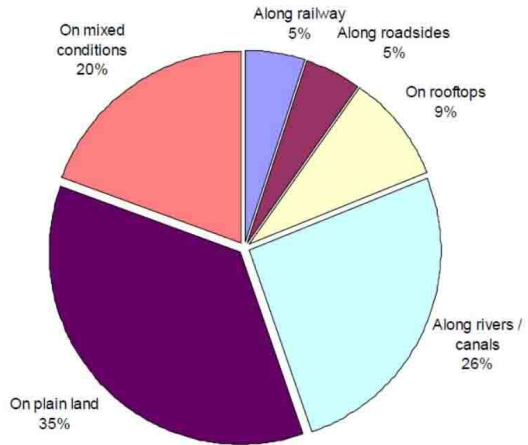
The huge immigration into city resulting in many unorganise urban settlement throughout the city. In 2016, there are still 298 poor urban slum and latter were reduce to 215 in 2016 in form of land upgrading and resettlement. According Phnom Penh Municipality, there are two main type of informal settlements: a) ID Poor; and (b) Urban Poor. "ID Poor" is a national poverty assessment methodology used to identify poor households for delivering targeted assistance programs to those who most need it. The terms "Urban Poor," "Urban Poor Communities," (UPCs) as well as "Urban Poor Settlements" have been used somewhat interchangeably to refer to communities that are largely informal, or resettled from informal areas.



Map of informal urban settlements in Phnom Penh in 2016



Figure : Types of low-income settlements in Phnom Penh

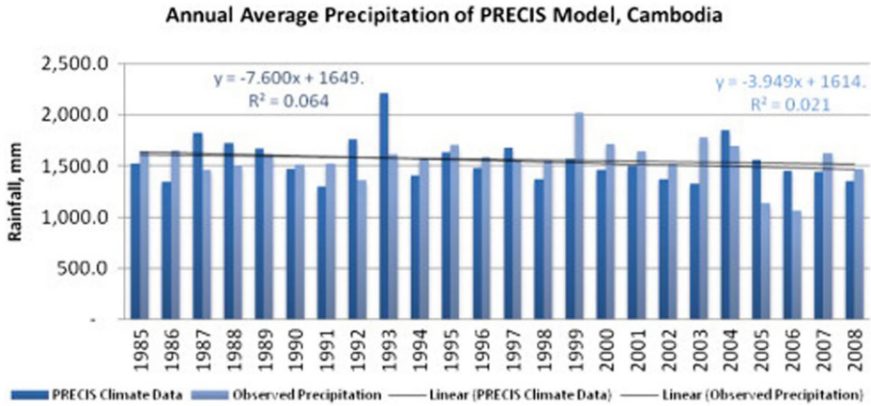


To be easily categorise the urban slums, Phnom Penh Municipality classify settlement into 13 types but mainly they can be seen in main 5 form of living along railway, along roadsides, on rooftops, along rivers/canals, and on plain land.

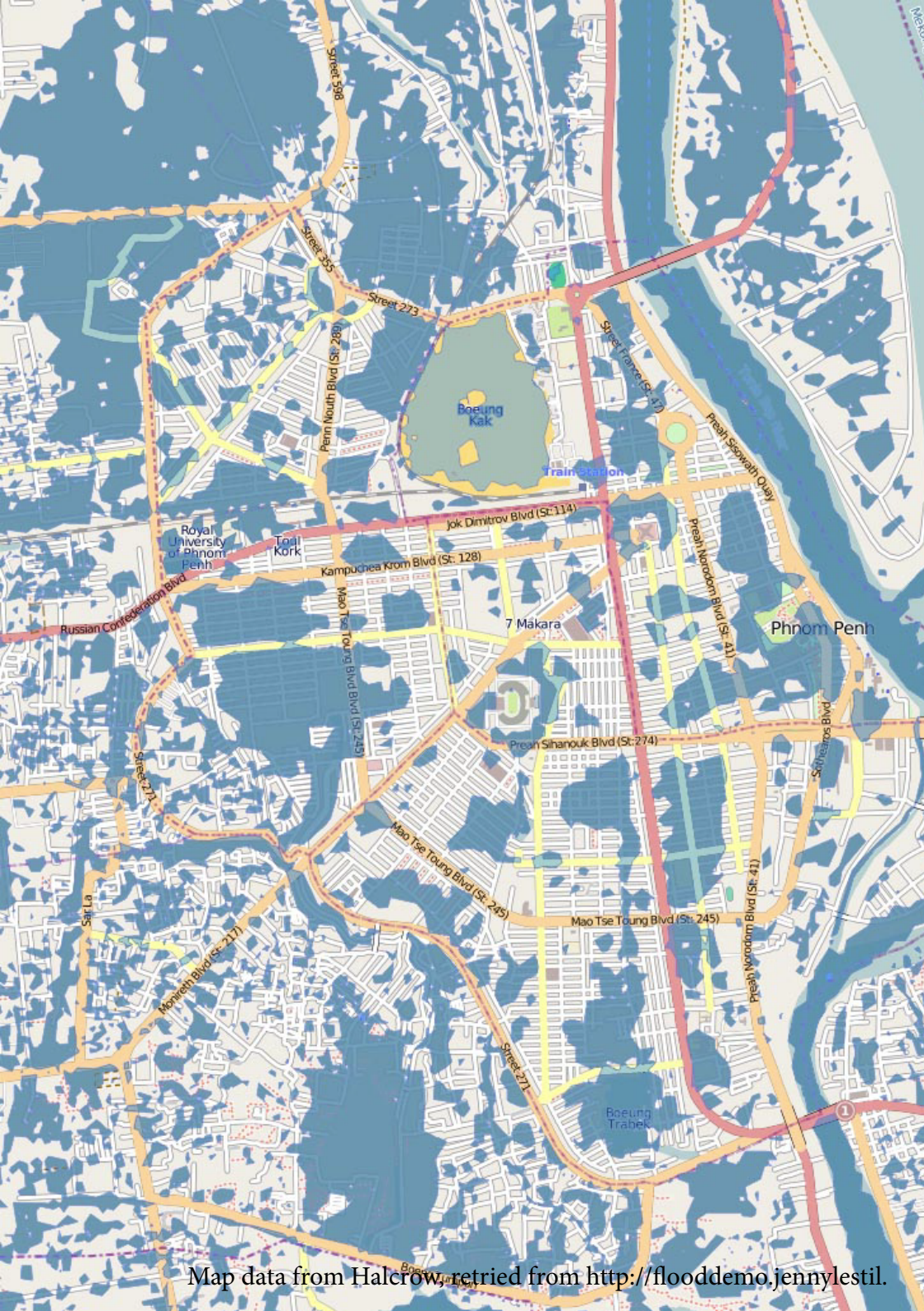


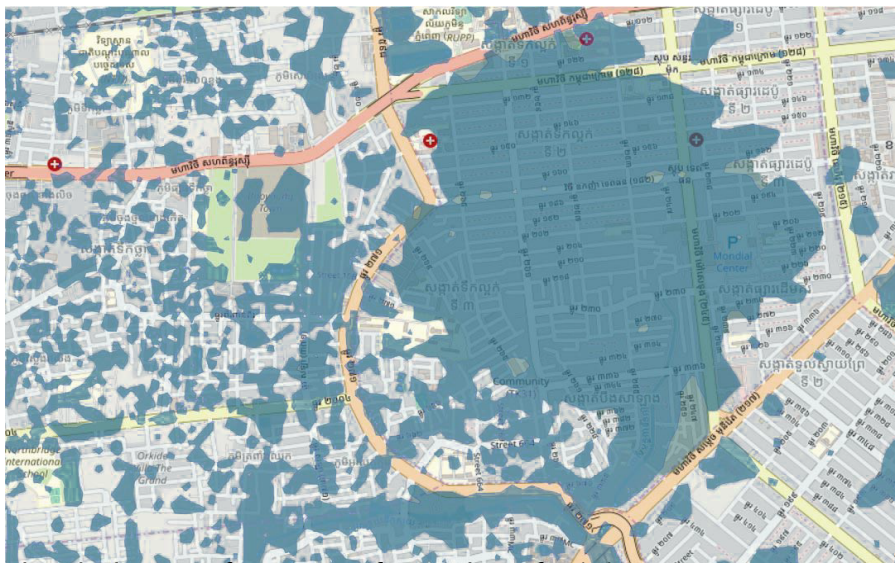
Informal urban settlements on rooftops in Phnom Penh

2. CHRONIC FLOOD



Comparing to Sweden Cambodia average precipitation is 2.5 time bigger than Sweden of 1400-1600mm/year. However, the rain in Cambodia mainly dominate in 6 months during rainy season from June to November. This short period of raining time bring huge amount of water into the city causing the floods in most of the neighborhoods





Flooded Area of 125mm after a day of raining

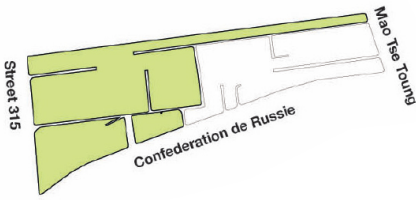


Current Floods situation in Phnom Penh

3. THE LACK OF GREEN SPACE



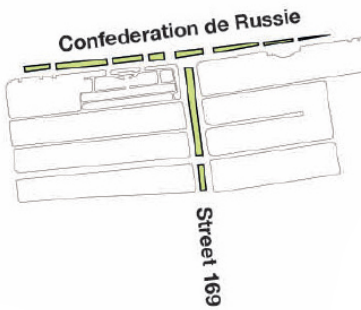
01



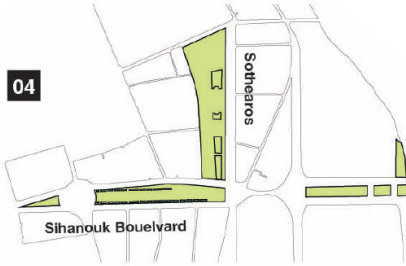
02



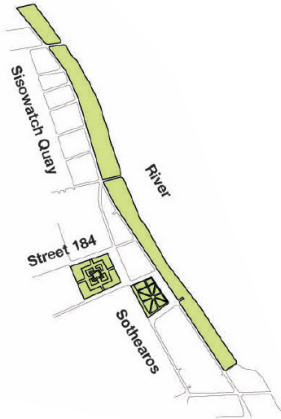
03



04



05



06

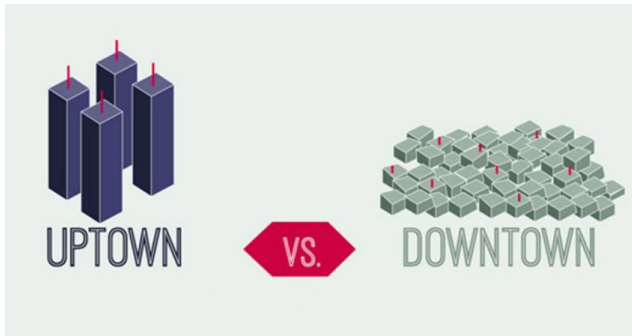


The maps show clearly that the city park share very limited amount of land area in the city.

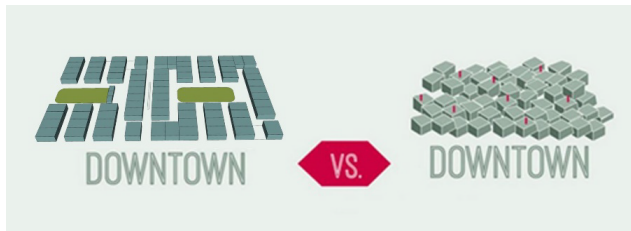
- Most open space situated in the inner city(old town) and fever few on the outer ring of the city
- Mostly situate in inner khans(districts)
- Series of formal parks and garden
- Hardscape and formally planted
- Decorative purpose rather than functional water features

Public Parks and green space shown in green. Map drawn by author through survey, Shelby Doyle(2012), Phnom Penh City of Water

4. URBAN DIVIDE INEQUALITY AND EXCLUSIVE



Contrast urban structures between uptown and downtown



Contrast urban structures between downtown and downtown

The influt of population into the city create housing issues. With non proper city planning, there is a remark number of unorganise urban settlements almost everywhere in the city in different forms. People move to the city and start to settle on vacant land of government property and non owner property.

On the other hand, the dramatic increase of housing development to suit the need of the people pushing to other consequences to the city, which are building gating community and the exploit amount of floor plan for each household. These new type of urban development trend brought the city into thousand of different seclude city inside the city, creating barrier to the flow of people interaction, traffic as well as other social activities.

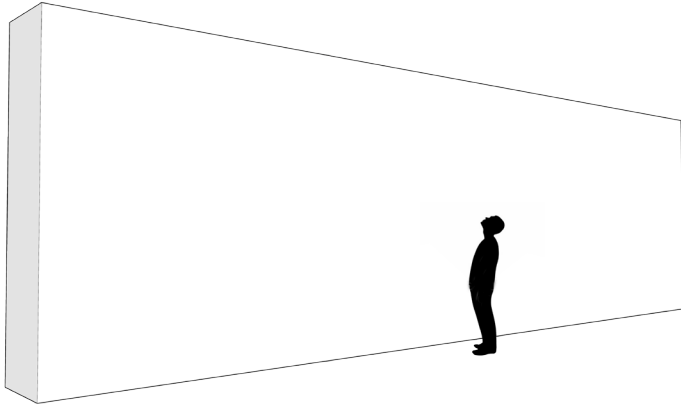
Gate Community or **wall community** is characterized in form of close residential area guarded by the wall, fence and restricted for only the residential to enter. This type of community usually provide amenities for only the residential inside the gate and exlude everthing of surrouding. This enclave territory bring both good and bad quality to the people and the whole city. In Phnom Penh, Cambodia the gate community doesn't signifiqe much about the social classes and social division since the property inside the community usually seem cheaper or sometimes comoparable with the surrounding areas.



Peng Huot Gate Community, Phnom Penh, Cambodia



Peng Huot Gate Community, Phnom Penh, Cambodia



The gated community has different characters with different purpose. The first category so-called the **security zone**, where the gate and wall built around the site to mainly protect from any type of crime and other physical security purpose. This is one of the most selcude form since it's strictly cut away from neighborhood and each house might have another layer of fence. However, the enclave land doesn't seem in a sense of social class division but rather a protection. The second category- **Prestige community**- is characterised by the division of higher class with neighborhood. This enclave is in both physical and social seperation. Like making friend, we love to have relationship with those who share similar interest and characteristic. People tend to live close to those with similar social class, urban characteristic. The gate protect the high social stratum people, celebrity or other high position in government sectors. However, prestige community also designed for middle class people. The whole purpose is to maintain control security but also havaing highly privacy form. Lastly, the closed community is in the form of **lifestyle** enclaves, where the gate is mainly ensure high security for purpose of elite leisure activities that the community has to provide. The gate usually compose of many recreational facilities and activities, for instant, golf clubs, smimming pool, and sport club. Their target group are retired people, and high class group.



Type 1: Security Zone
 - secure the area from outside crime
 - lower class and middle class people

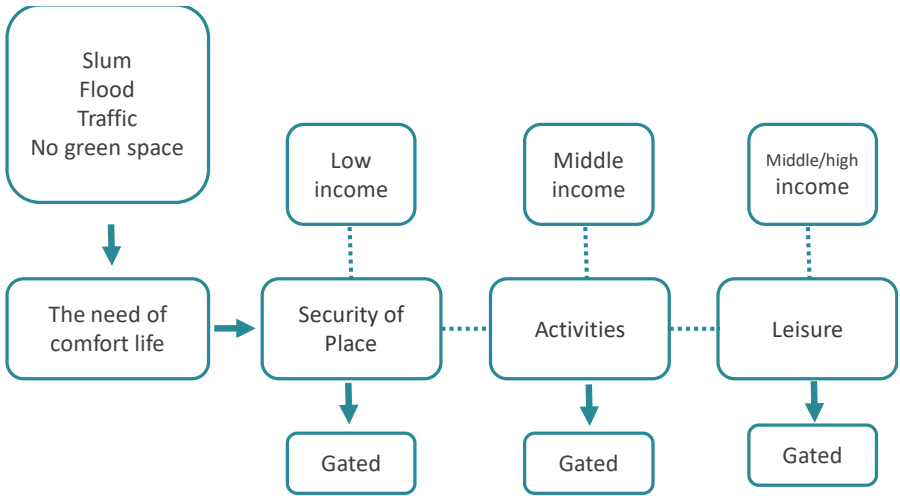


Type 2: Life style
 - secure the area from outside crime
 - Share similar social class
 - Divide class and separate from unorganise



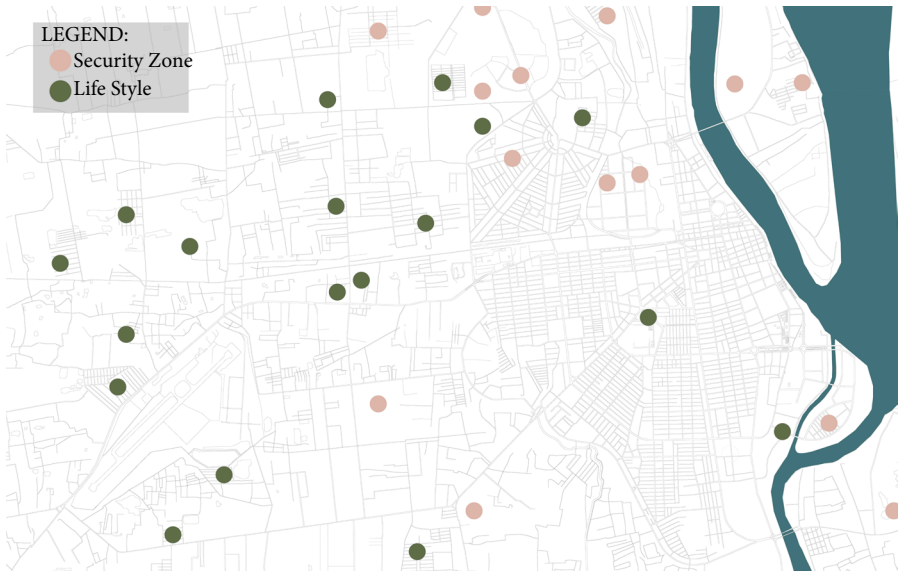
Type 3: Prestige
 - secure the area from outside crime
 - Prestige lifestyle, with various recreational park, sport club and golf club

There is a relationship between the need of housing and level of income. The order of the house need are different for different class. The lower and middle class will focus more on the security not only the crime protection but also secure the ownership of the property. purchasing property outside the gate community have some risk of faulty document and illegal ownership while the gate ensure all the legal process since it need to be approved from ministry. The higher class are more likely look for more quality of life in livable city. They may look for more recreational park, and other sport activities.



The chronic challenges that the city facing pushing the residence to find better quality of life inside the city. Since the current city development couldnt suit the needs of people, the private developpers propose new trends of gated community which serve as a small city/community and which provide basic leisure amenities that the city itself is still struggling. The low income people love to seek for the wall community mainly for security purpose. While Cambodia is a poor country, the capital is currently trying to deal with many crimes. The gated community with enough security guards will ensure the safety inside the neighborhood fence making the residence feel more secure to get out at night as well as to design the house more open to outside(less fence). Same to middle income and high income families, they all seek for better quality of life but more in term of leisure activities. In short, the rise of income and urban issues lead the city to build more and more gated communities.



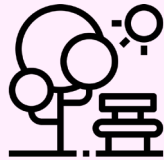


Map of gate community in Phnom Penh, Cambodia

Gate community spread out all over the city in mostly Security Zone or Lifestyle forms which also imply social income of people.



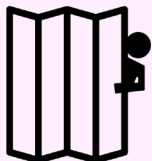
Community Spirit



Recreational park in Gate

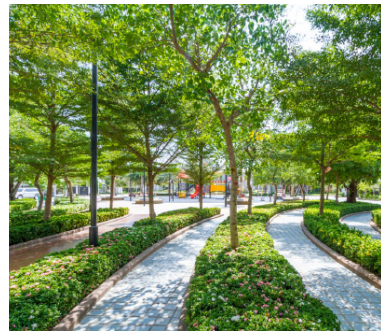


Security



Privacy purpose

Of course, while city are full of unorganise urban settlements, people in the city preper to have a better space for themselves and for their own community. The need of this privacy is another pushing factor for city resident to buy houses in enclose community. Secondly, The city itself doesn't provide enough public space and other amenities while gate community usually compose of some basic amenities including parks, swimming pool, gym, and playground. These supportive factor help to improve the quality of life in city. Thirdly, gate community play ensure a strenght in securring the community both in physical and mental form.

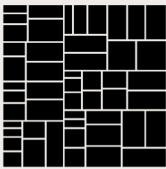


Characteristics inside Gate Community which usually compose of residences, parks, playground, sport center(swimming pool and gym), and probably mini-mall

In contrast to the benefits, gate community brought many direct and indirect issues to the community themselves and the surrounding people. The fence create a sense of seperation of living resulting a lost of community spirit, and culture of sharing that the people use to live in thousand of years. This contrast in lifestyle may affect the long term interaction people approach each other. In the meant time millions of people that live in the city now are originated from rural area which has completely different lifestyle, the opens, the welcoming and the community lives while the city life particularly the wall community merely has a lifestyle of individualism, less sense of belonging and seperate from other communities.

Besides the indirect impact, we also see the continue trend are de-veloping in misleading direction which we can see in the misuse of space and the low key design. These can be seen in the lack of public realm, less green area, too much floor area and monotone design.

MISUSE OF SPACE



Too much built area



No public realm



Density divide

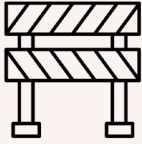


Big floor area



Less green space

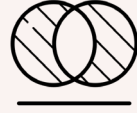
EXCLUSIVENESS



Mobility Issues



Gate Community



Seclude function



Gate in Gate

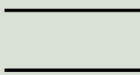


Lost of Community Spirit

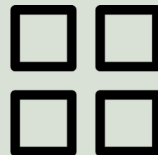


Contrast lifestyle

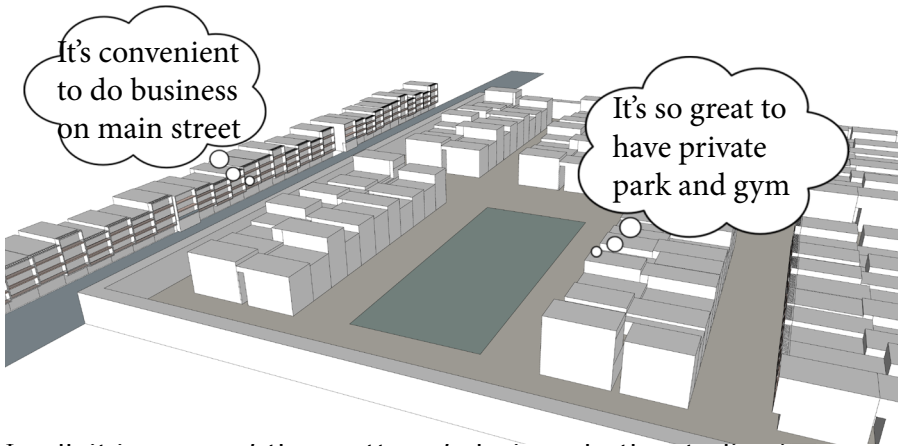
MONOTONE



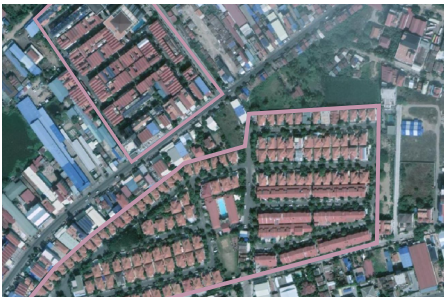
Usually one function
rath



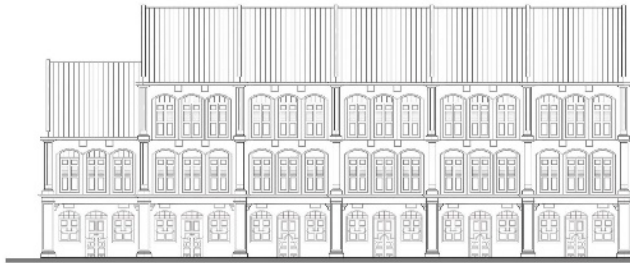
Same house arrangement



In all, it is more of the matter of choice whether to live in community or to live outside community. Both of them share different character and has both advantage and disadvantage. The gate people prefer to have more private life and live in more peaceful environment while the outsiders love to live in active street life so that that they can attract more client for their business. That's one of the main reason why the ground floor house on the main street are all shop houses.



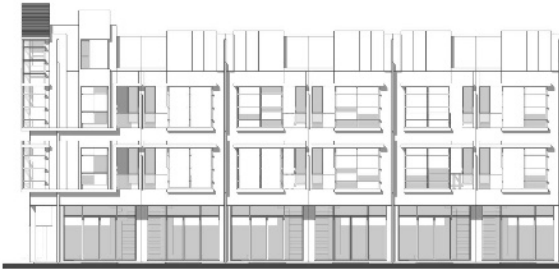
Mobility Issue near Gated communities



Shop House : 1885- 1953



Shop House :



Shop House : 2000- Now



Shop House



Khmer House (from

Unit usage for housing in old town, gated community and in countryside village



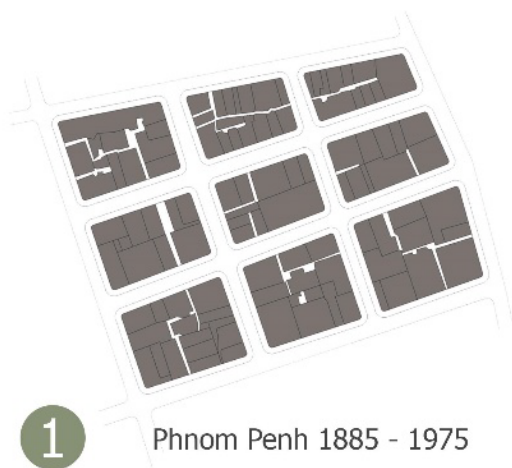
1953- 1975



: 2000- Now

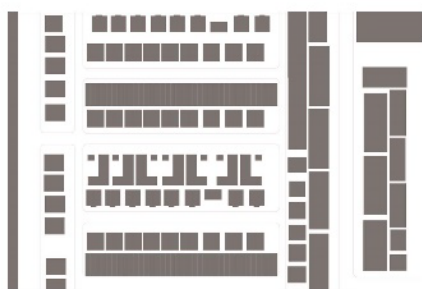


(old time - now)



1

Phnom Penh 1885 - 1975



2

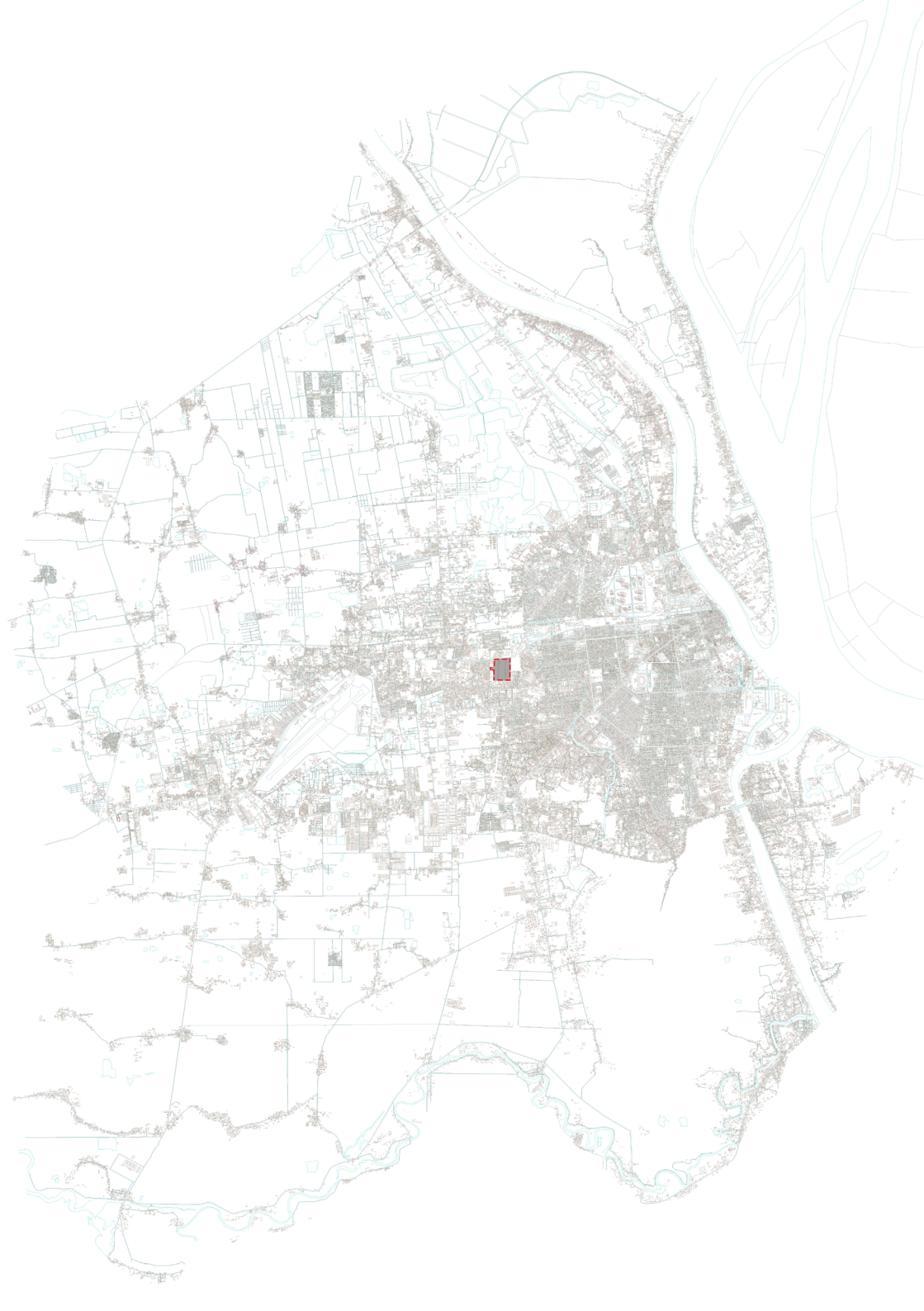
Phnom Penh 2000 ◀ Now



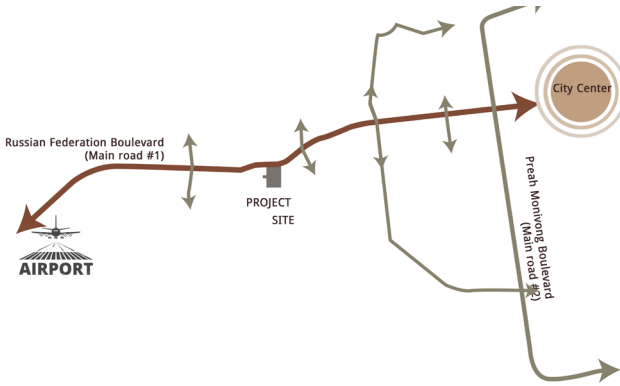
3

Village from Old Time - Now

SITE CONTEXT

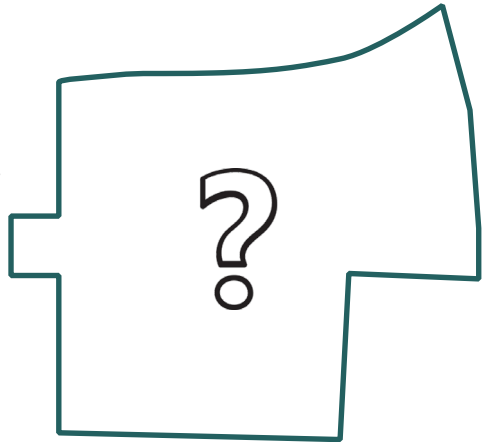


1. SITE IN CITY SCALE



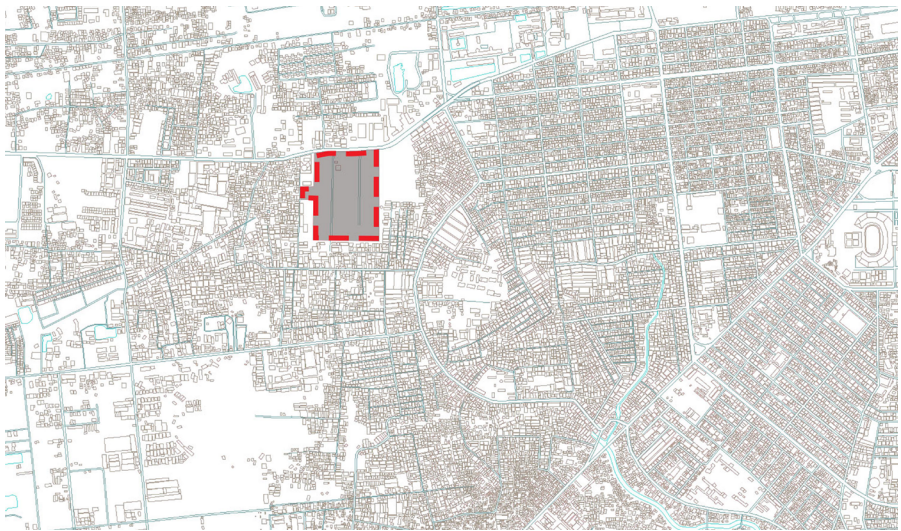
The site is quite accessible since it is located on the main street from Airport to city center. The position that almost share a separation

line between the old city structures and the new development area is quite critical since it require a smooth transition touch on the edge to ensure the better connection of city structures



The main reason I am choosing the vacant site due to the fact that the gated community trend always develop on unbuilt structures land. They will first start the first step by building the wall for their communities and disconnect with surrounding.

However, the land which might look empty from above does have a huge connection with nearby areas and has its own identity. But it need the developer to redefine and revitalise the area.

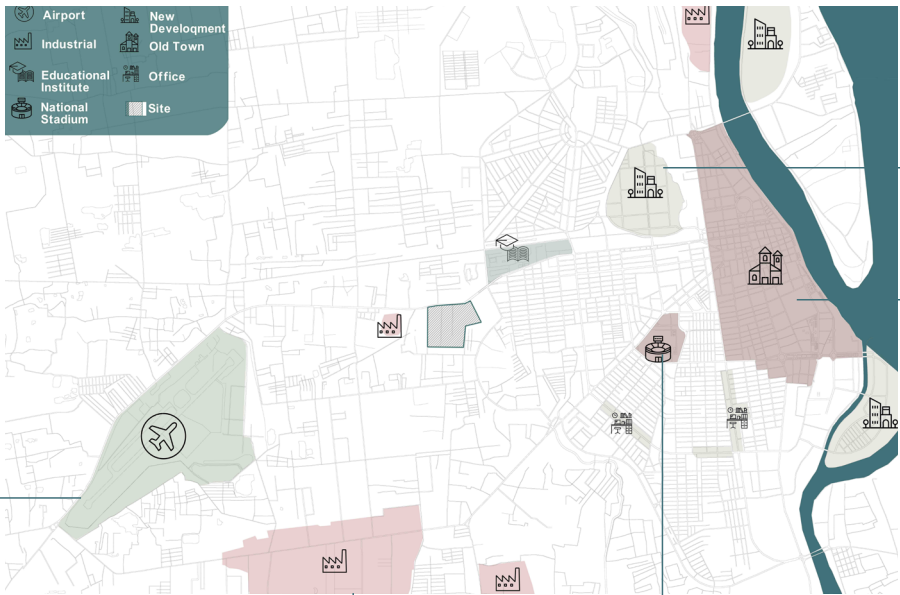


Site in location to city scale (in road structure and urban fabric format)



Site in location to city scale (satellite)

-  Airport
-  Industrial
-  Educational Institute
-  National Stadium
-  New Development
-  Old Town
-  Office
-  Site



Garment factories



Old Stadium



Old City Area



Phnom Penh Airport



New City Center



Institute of Polytechnics



Royal University of Phnom Penh



Mekong University of Cambodia



Institute of Technology of Cambodia



In the recent years mall become dominated place for all type of people to hangout in Phnom Penh. It provide all the entertainments facilities and needed activities, ranging from the shopping area to a concert hall.

A surprise data show that a Mega mall in Cambodia can attract up to 15 million people a year comparing Airport which could attract only 10million passengers.

Since the project site is on the main street from Airport to city and center and no any mall has been introduce yet to the west side of the city, the new mall and existing foodcourt will play a new role to attract people to the new site.



Playground, foodcourt, amusement park



Pub, and restaurants



Sport and other leisure activities



Light show, meeting place



Exhibition and stage



Main road from Airport | 1



Car showroom-in front of site | 2



Hospital- for high income families | 9



Open market in dense area | 10



Small road, dead end street, calm | 8



New flat house, small street, less shop activities | 7



Stupa



Private chinese community 3



Popular food court Area 4



Mapping site surrounding characteristics



Popular food court Area 4



Calm street -mixed income households 5



upas(cemetery) and pond inside pagoda 6



Pagoda sqaure - multi purpose usage 6

MAIN CHARACTERISTICS OF SURROUNDINGS

UNORGANISE URBAN SETTLEMENT:

On the west side of the site lies hundred of improper settlements with small street, dead-end roads. The area is not regarded as a poor living condition settlement since there is a various mixture of different income household, and most of them are low-medium income families.

The area enclose a street market making the whole area even denser and more unorganise. More than that, there is a number of apartment renting for the garment workers of nearby factories.

FOODCOURT:

To the east top side, there are dozen of foodcourt(restaurants) which serve very good food in reasonable price, making the area become very popular for people to hangout as well as dinning spots.

The structure of foodcourt are steel frame which are temporary installemtn but still lie for more than 5 years already.

HOSPITAL:

The 12 storey building on main road is one of the big gesture of structure outside old ciity ring.. However, this private hospital is mainly for presitige families.

ROAD SYSTEM:

The site is very accessible from almost everywhere in the city since it sits on the main street from Airport to city center with many bus connections nearby the site.

In contrast, the area on the east and south are difficult to access due to small roads and several dead end roads. That means some households need to take a few detours before reaching the destination.

PAGODA:

Pagoda is a sensitive area in which a religious and respectful touch on the edge of the site must be taken much into consideration. Tik Tla pagoda is home, school, meditation area and religious house to dozens of monks. But this pagoda doesn't serve only the monks but for thousands of people nearby for festival activities which usually take place around 6 times a year followed by consecutively small events/festivals.

Another perception that comes to the local mind about pagoda is the stupa land which is known as the cemetery. The site is next to the stupas zone down to the south. Cambodia is a superstitious country believing that living close to stupas will bring you bad luck, therefore, the site would need to leave some gap between the 2 edges.

SITE AND DENSITY COMPARISON



Phnom Penh Capital, Cambodia

Population: 2,014,015
Density 5,700 /km²
Density of area(Tuol Kok) 23,262/ km²



Battambang City, Cambodia

Population: 144,323
Density 2,363/km²



Stockholm Capital, Sweden

Population: 960,000
Density 4,800/km²
Density of Area (Östermalm): 3,402/km²

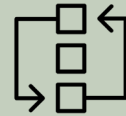


Lund City, Sweden

Population: 91,086
Density 3,376/km²

SITE ANALYSIS-SUMMA-

- Very **accessible** and **connect** to the whole city



- Full of **urban life**, Potential in **attracting people** from nearby areas and the whole city



- **Diversity** in Function: Pagoda square, restaurant, residential, Hospital, market, university



- Risk in **flooded** during rainy season



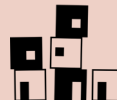
- **Traffic Jam** on the main street during rush hour



- Pedestrian and cyclist **non-friendly users**



- Surrounded by many **unorganized urban settlements**, urban exclusion and division



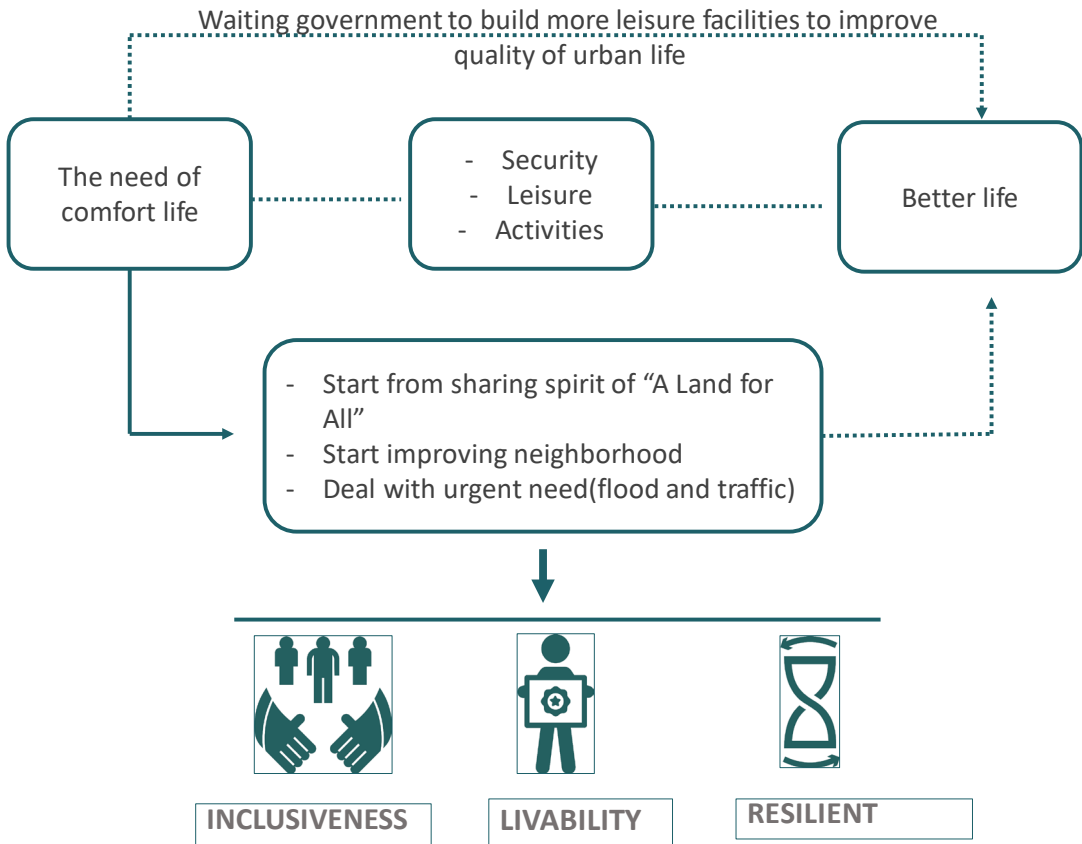
- **Hardscape**, lack of green space neighborhood



- **Not connect** to surrounding neighborhood



GOALS AND STRATEGIES



The goals of the project is to improve quality of life in neighborhood by taking everyone into account at the same time, the new neighborhood has to ensure the livability and flexibility in designing new urban structures.

INCLUSIVENESS



OPEN COMMUNITY

- Create the area open to surrounding function
- The community for everyone

COMMUNITY SPIRIT

- Break all the gate and bring back the community lifestyle
- More sharing activities at the sites

HUMAN SCALE

- Create more pedestrian and cyclist friendly users
- Create public space for people and for everyone
- Caring every corner of the building that the eyesight can see

CULTURAL CONTEXT

- Respect the close by pagoda peacefulness and religious purpose

SOCIAL STRUCTURE

- Making the house affordable for everyone

FUNCTIONS

- Respect surrounding functions and link them

MIX INCOME

- Housing for all income family types

LIVEABILITY

MOBILITY

- Improve the traffic flow surroundings and reduce
- Connect the main street

PUBLIC REALM

- (COMMON SPACE AND ACTIVITIES)**
- Creating quality of space for the continuous activities
- More open green space for people and serve as

POCKET PARKS

- Create more small parks in neighborhood ensuring the park for all

QUALITY OF ARCHITECTURE AND SPACE

- Making the quality of space for comfortability, connectivity

PRIVACY

- More intimate space for people to create the sense of connection of space



RESILIENCE



w inside the area and
ce traffic jam
et to sub streets

MIX PUBLIC PARK)

ace by considering
s
ce for the usage
water retention area

rks inside each
ng the accessibilty to

CTURES

building sytle for
ivity and inviting

for neighborhood to
nectivity and the sense

MIX USE

- Create various functions in the area to make it lively in different shift

-

LOCAL IDENTITY

- Keeping some functions(restaurants, pagoda) and strenghtening them

ADAPTABILITY

- The areas that can absorb more rain water preventing from flood

- Architecture that adapt to local climate (better ventilation and sun protection)

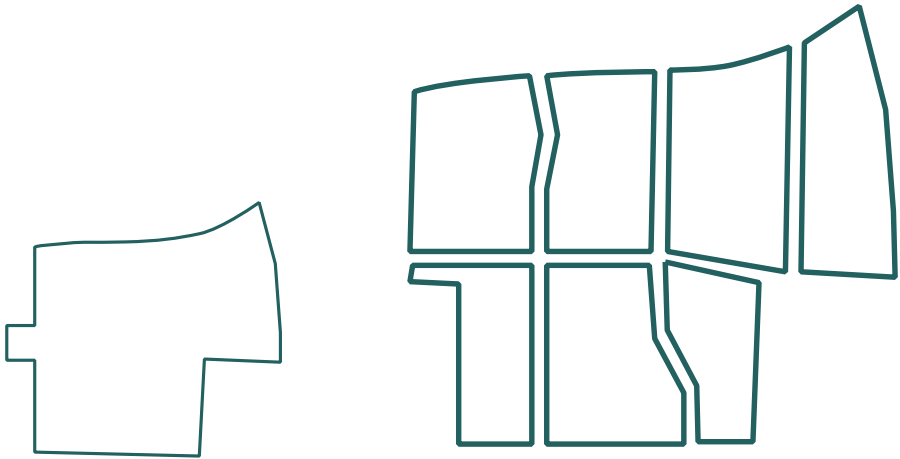
MIX LIVING TYPE

- Mix all type of urban housings including shop houses, villa, twin house, appartment



INCLUSIVENESS

OPEN COMMUNITY

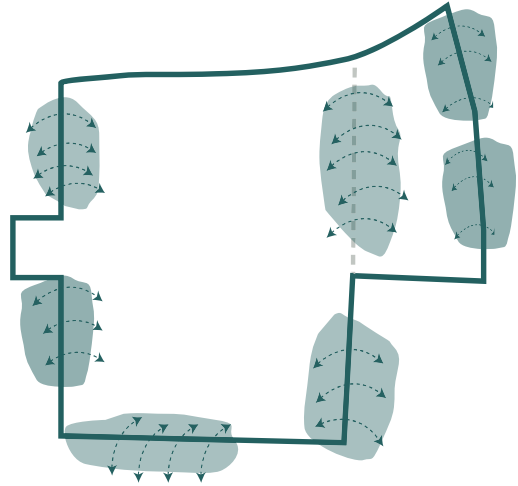


To break the concept of gated community while trying to ensure the quality that the city has to provide, it is a step to start from making a quality and open community to everyone show that each piece is sure to distribute not only to the site but to the surrounding. To do that, the site is broken down into smaller pieces to have better context spread out into the area. Each piece is open public to everyone while maintaining enough privacy for residences.

The further image of the site is not to be seen as a new area but to emerge into the existing condition.

CONNECTED FUNCTIONS

Even the site is pretty much of a vacant land but it is surrounded by various quality of urban life including different residential areas, commercial street, hospital, pagoda and pagoda square.



These plentiful functions are emerged into the site to ensure the smooth edges transition. The pagoda square down to the south will expand to front park and canal. The existing food-court share similar function with open mall nearby.

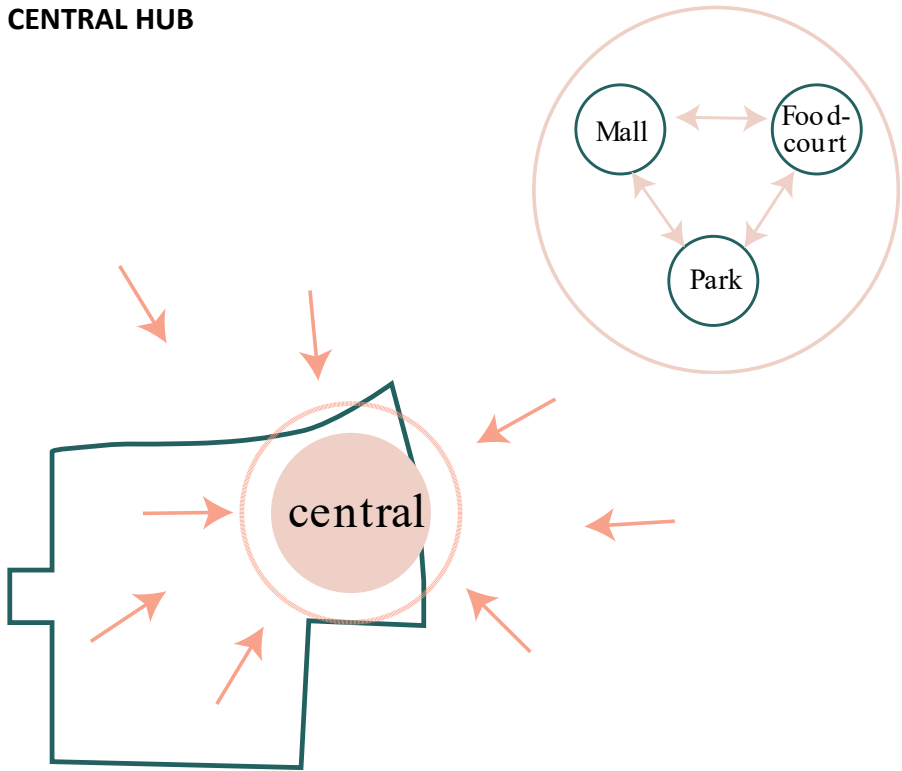
MIX HOUSING AND INCOME GROUPS

Different type of houses come with different property values ranges, including low cost housing, apartment, courtyard, shop house and row house.



The different characteristic and quality of houses provide different quality but maintain social interaction. Living together with people from different classes is actually common in Cambodia but they need better meeting places also to improve social connection.

NEW NEIGHBORHOOD CENTRAL HUB



The site has a huge potential being a new central hub for the district since it packs of residence with full urban life. The new park, the mall and the existing foodcourt which called "Central Hub" serve each other purpose which mean one function attract different target group but each one will push the other to be more active and lively.

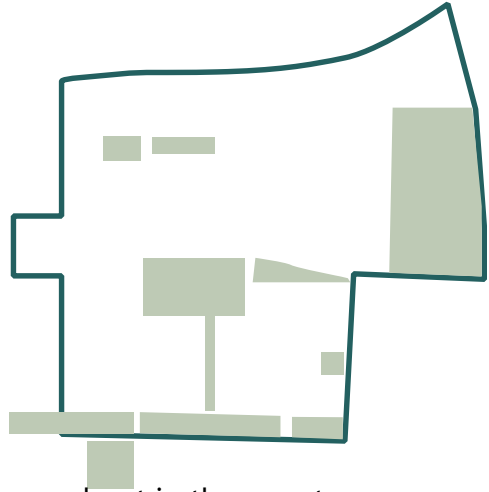
This new central area is a symbol of opening the new site to surrounding since it not only serve for the new residence but for everyone. The three functions play a role as meeting place and a new urban square out of the old city ring.



LIVABILITY

EQUALLY GREEN DISTRIBUTION

The site share two main green space, the public and the bigger one situate near the mall and existing residences and the smaller one is designed in more close up environment to bring more privacy feeling but keeping the site open to public.



The numerous pocket parks spread out in the area to ensure the green reach the new residences and the surrounding

VARIOUS GREEN PROGRAM

To bring more social interaction and to create a continue flow of people walking path, the site compose of different type of green functions serving different type of people.

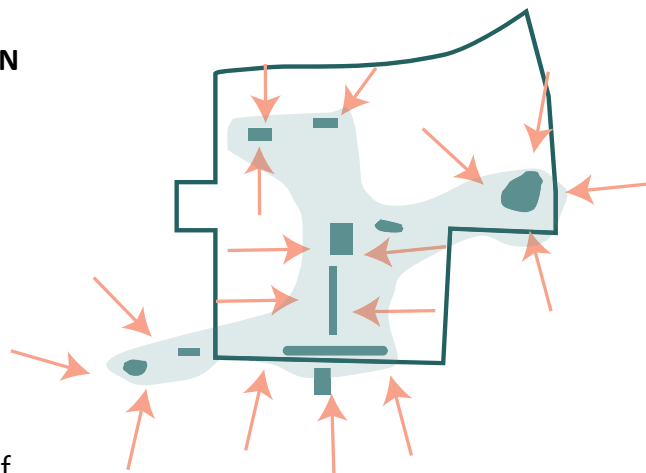




RESELIENCE

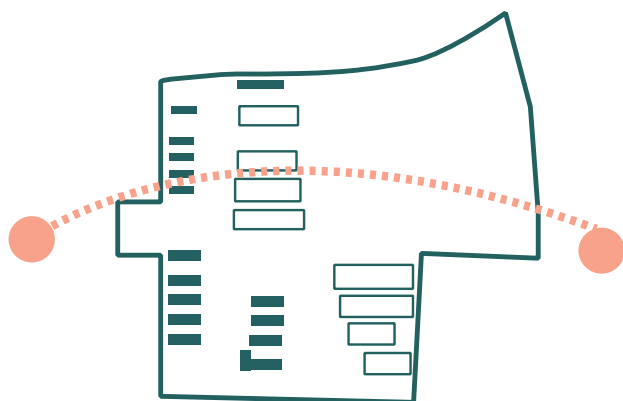
FLOOD RETENTION AND FLEXIBLE GREEN SPACE USAGE

Since flooded is more to solve in city scale but it also should be tackle from different neighborhood scale as well. Lake, canal, courtyard garden, and flexible usage of green space will discharge the flooded rain faster.



CLIMATE SMART

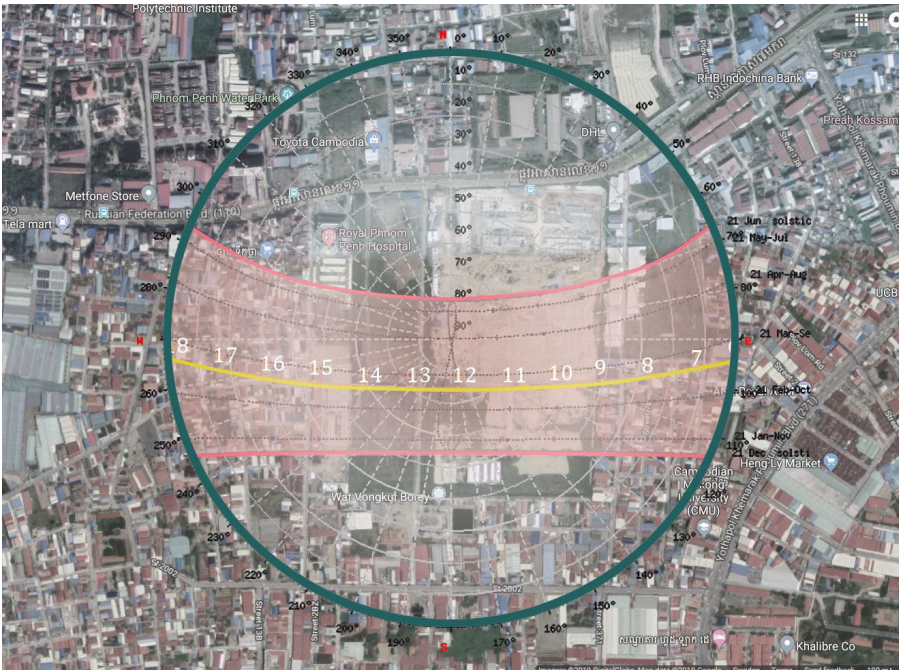
The horizontal stretch layout is the best form that people will have minimal direct sun light while getting better ventilation inside the houses.



CONCEPT-DESIGN TOOLS

Micro Climate

SUN: Cambodian expose to tropical weather of monsoon, having two main seasons, rainy and dry with average temperature of 29 degree celcius making the city expose to the heat throughout the whole year. To get the thermal comfort, people try to get away from direct sunlight and love to stay under the shadow. The protected they are from the sun the better it is. Not far from equator line, the country experience almost 12 hours of sun light in a day. The extreme heat in the day is usually from 11am to 3pm while the likely light is from 6am to 9am in the morning and from 4pm to 5pm in the evening. Taking this into consideration, the houses design should consider the shading styles to protect from direct sunlight particularly in the extreme hot hours.

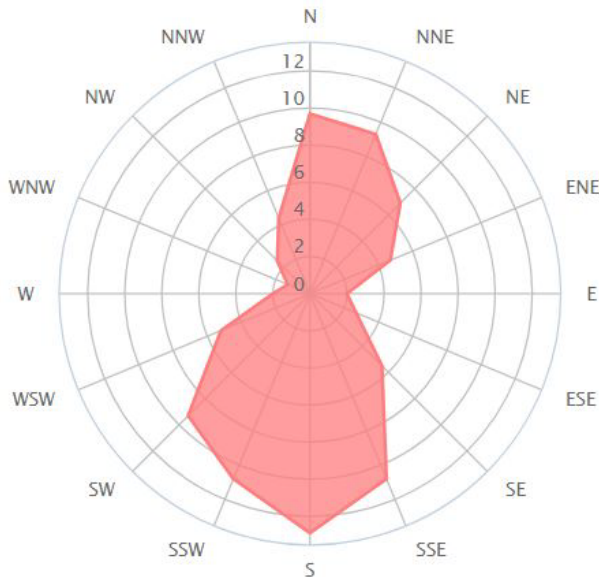


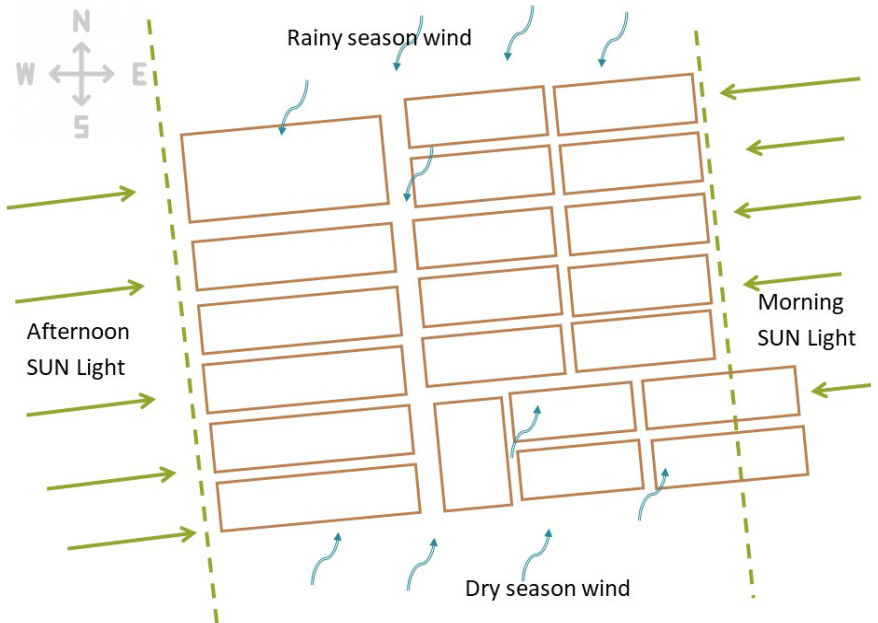
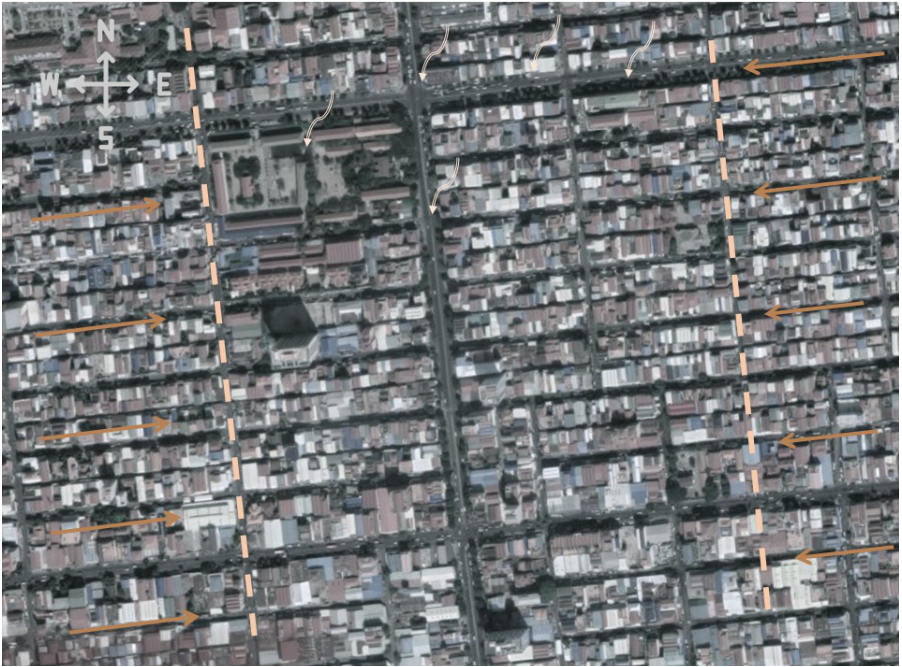
Sun ray Analysis over the site

Source: sunearth-

WIND: In the scorching ray country, the country expose to so much sun particularly from March to May which could hit the peak of 40 degree celcius. The wind is a power full natural tool to keep the thermal comfort inside and outside building. The typical wind speed doesn't vary much in the year, from 2m/s to 3m/s.

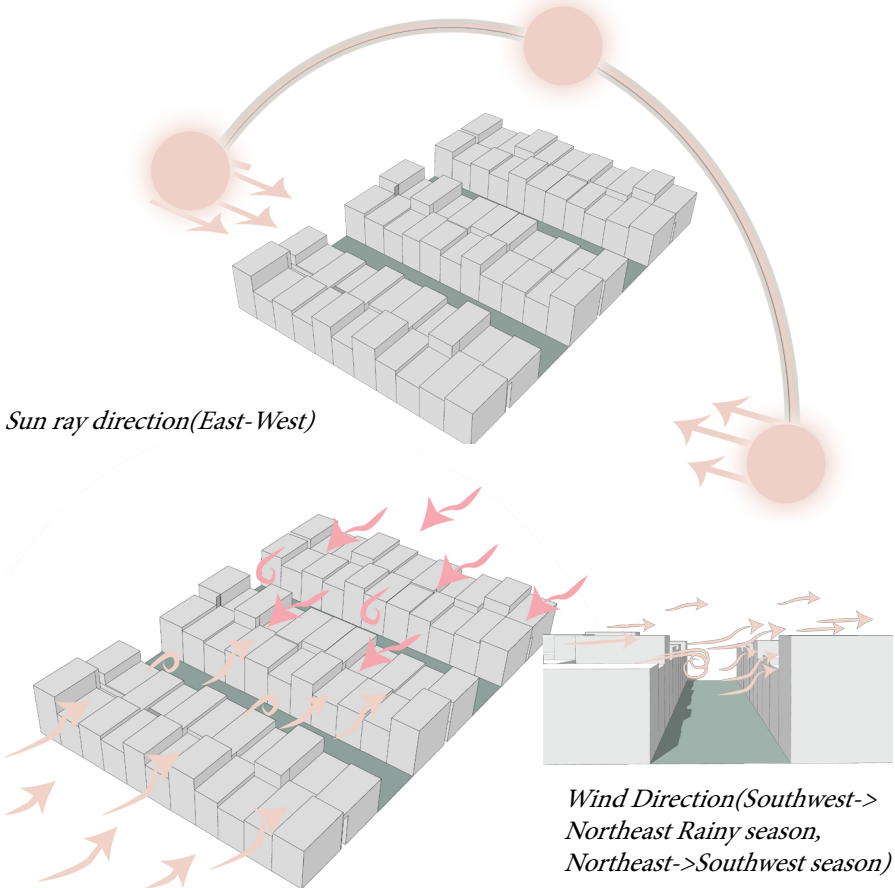
In rainy season(May to October) the monsoon wind blow from southwest to northeast. This wind bring lots of rain and moisture keeping the temeprature slightly lower. In contrast, the dry monsoon season running from November to April bring dry and hot air, blow from northeast to southwest slightly stronger than that during rainy monsoon.



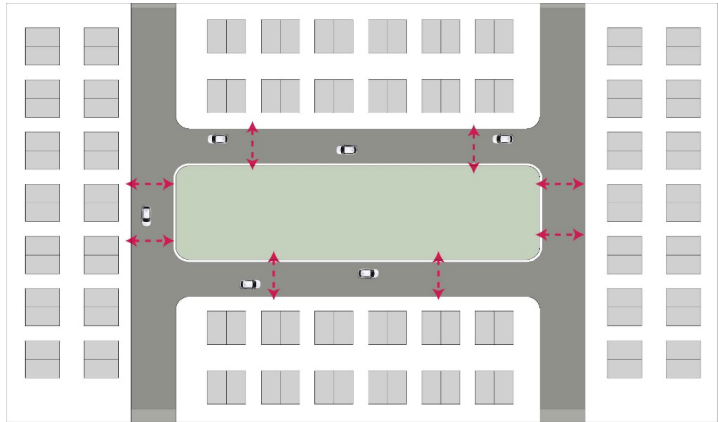


SITE REFERENCE: Choosing the old town as site reference as climate smart design layout, we found that the urban arrangement are alligned with sun rise and set direction(East - West) to minimise the effect of the direct sunlight while the block stretch along the horizontal line catching maximum wind in both seasons.

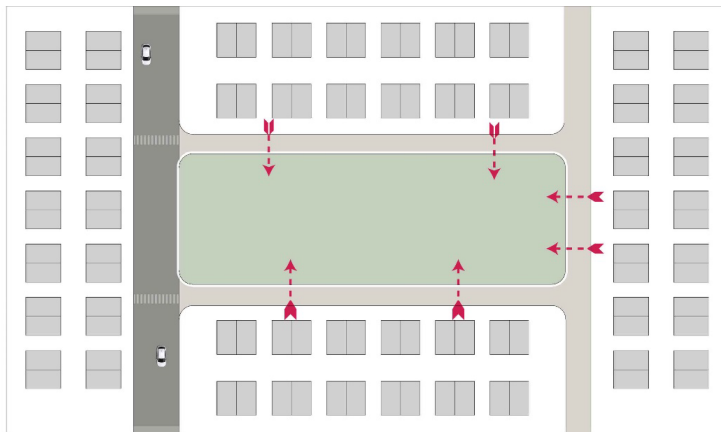
Even though the straightforward of urban grid structures is and outdate but this simple layout allow the wind to move easily with less obstacle on the road junctions. However, the building are placed too close to each other preventing the wind flow to all the areas



STUDY CASE ON CONVENTIONAL COMMUNITY IN PHNOM PENH

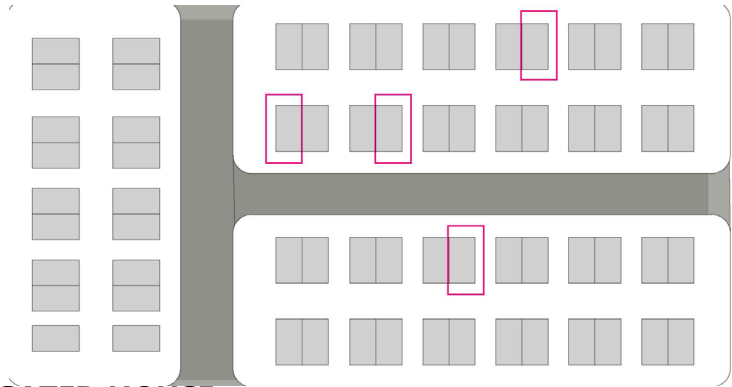


Inconvenient accessing to the park
Car Oriented
No Pedestrian and kids friendly



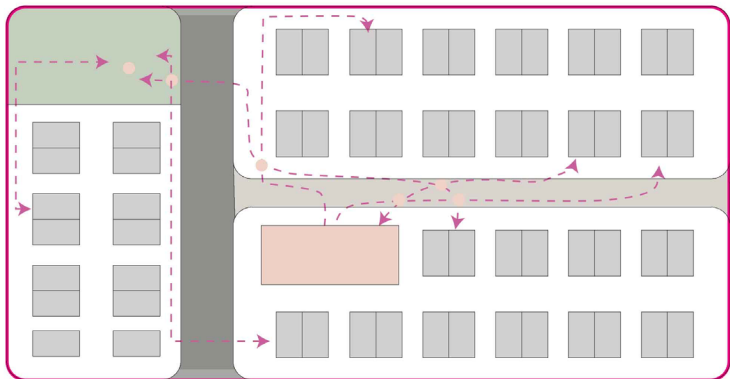
Minimize car flow near park:
Better pedestrian and kids friendly
More inviting feeling

ACCESSIBILITY TO THE PARK



GATED HOUSE:

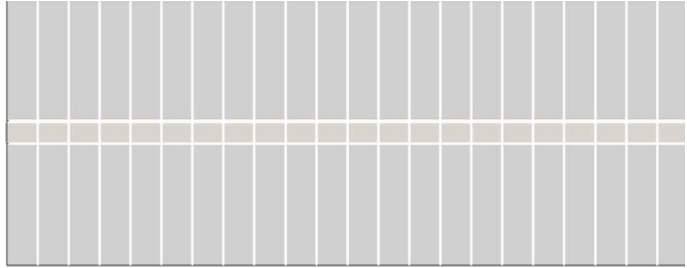
- Less social interaction with neighbors
- Car oriented



HOUSE IN COMMUNITY:

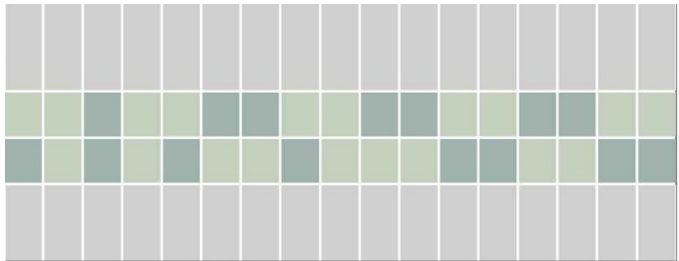
- Common parking space
- Pocket parks
- More movement, therefore, more social interaction inside community

UNIT BLOCK SIZE



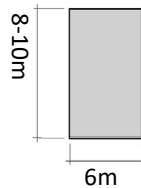
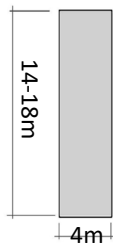
CONVENTIONAL ROW HOUSE:

Thin and long unit design
Poor ventilation and sun lighting

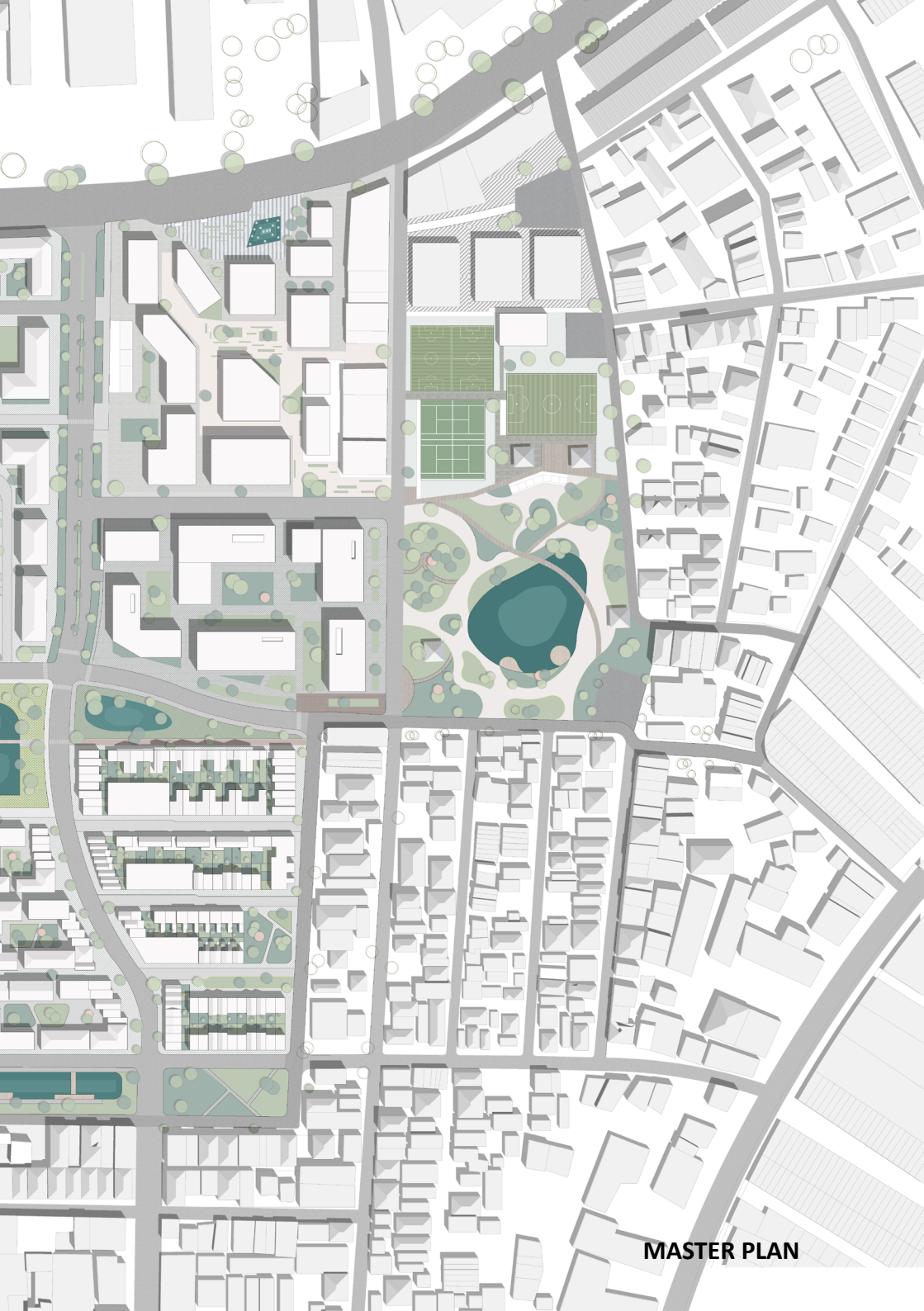


NEW ROW HOUSE:

Widen the width and shorten the length
Better ventilation and sunlight







MASTER PLAN

MASTER PLAN PROGRAMS

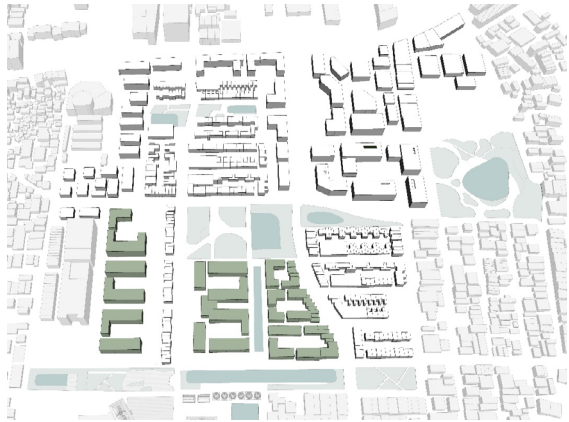


MALL AND FOODCOURT

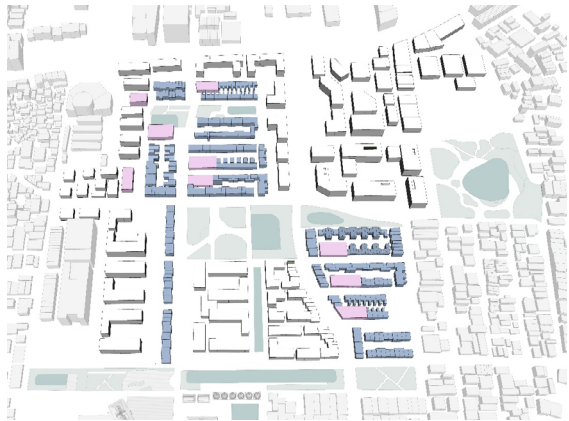


OFFICE AND STUDENT CENTER

OPEN COURTYARD



**ROW HOUSE AND
COMMON PARKING**



**HOUSE ALONG ACTIVE
STREETS**



MASTER PLAN LAYERS

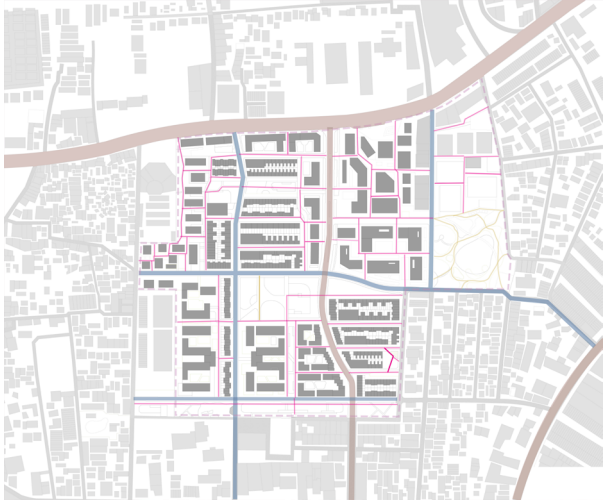
BUILT STRUCTURES



MAIN MOBILITY

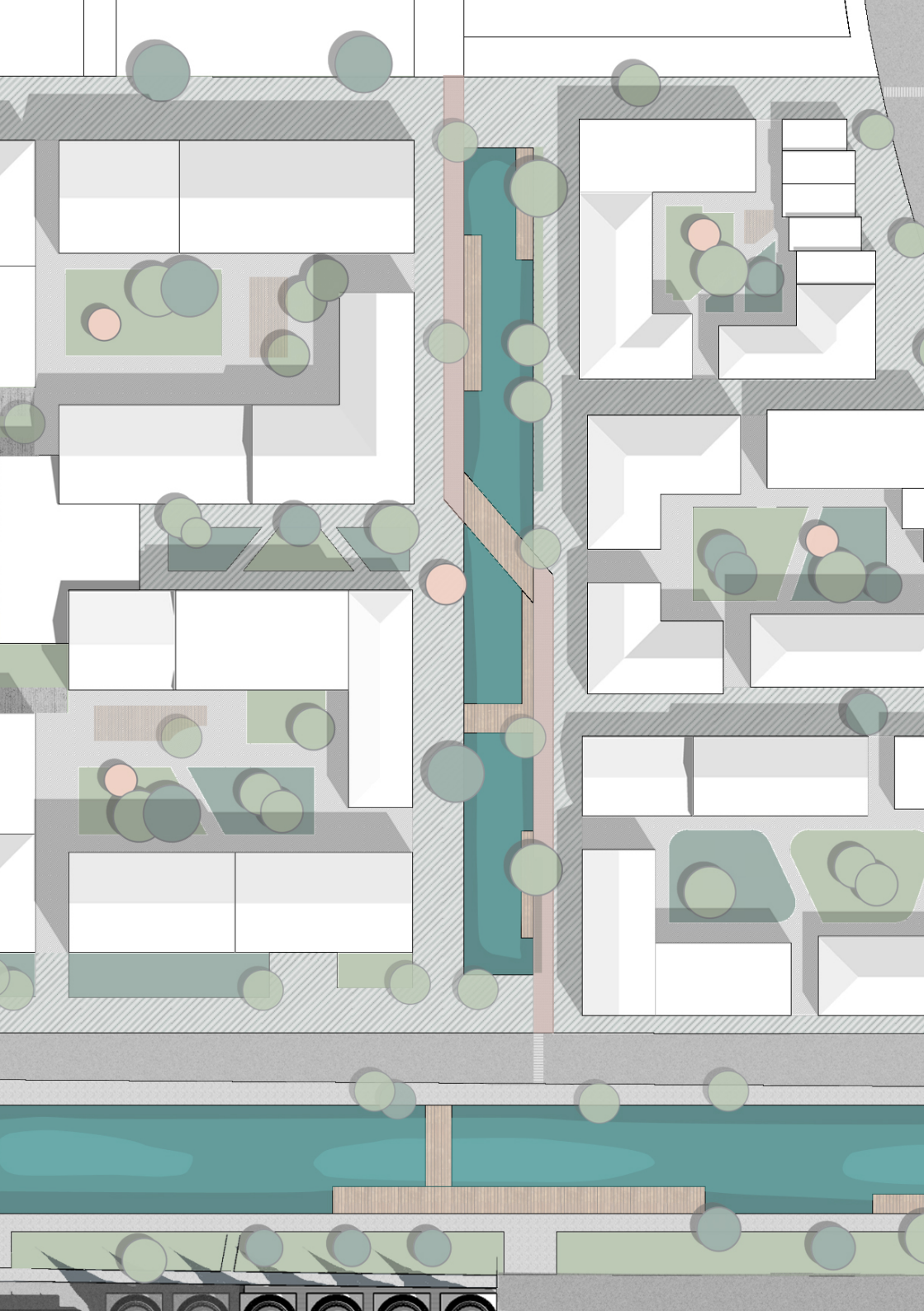


**MOBILITY AND INNER
CORRIDOR**



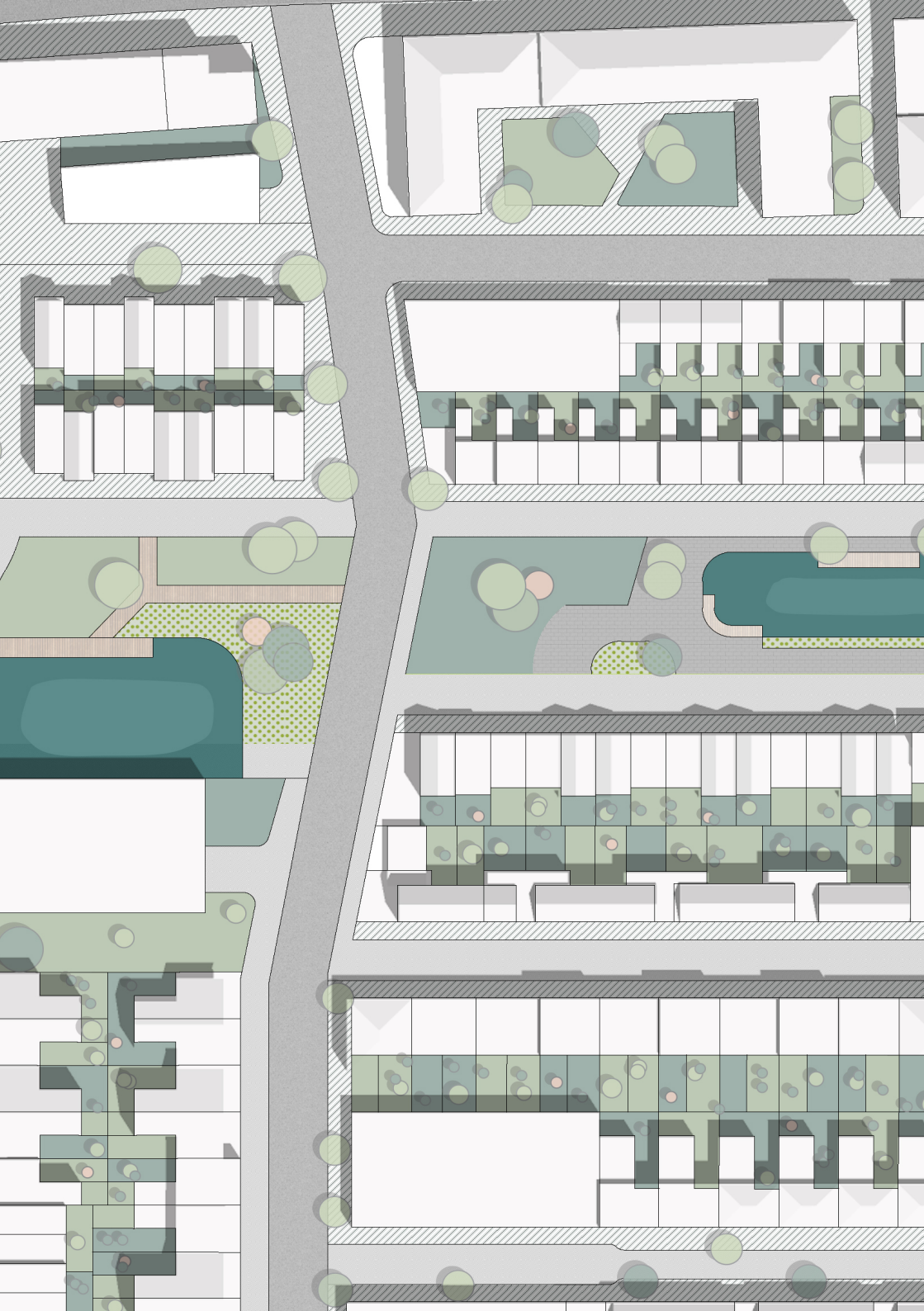
**GREEN SPACE AND
WATER FEATURES**

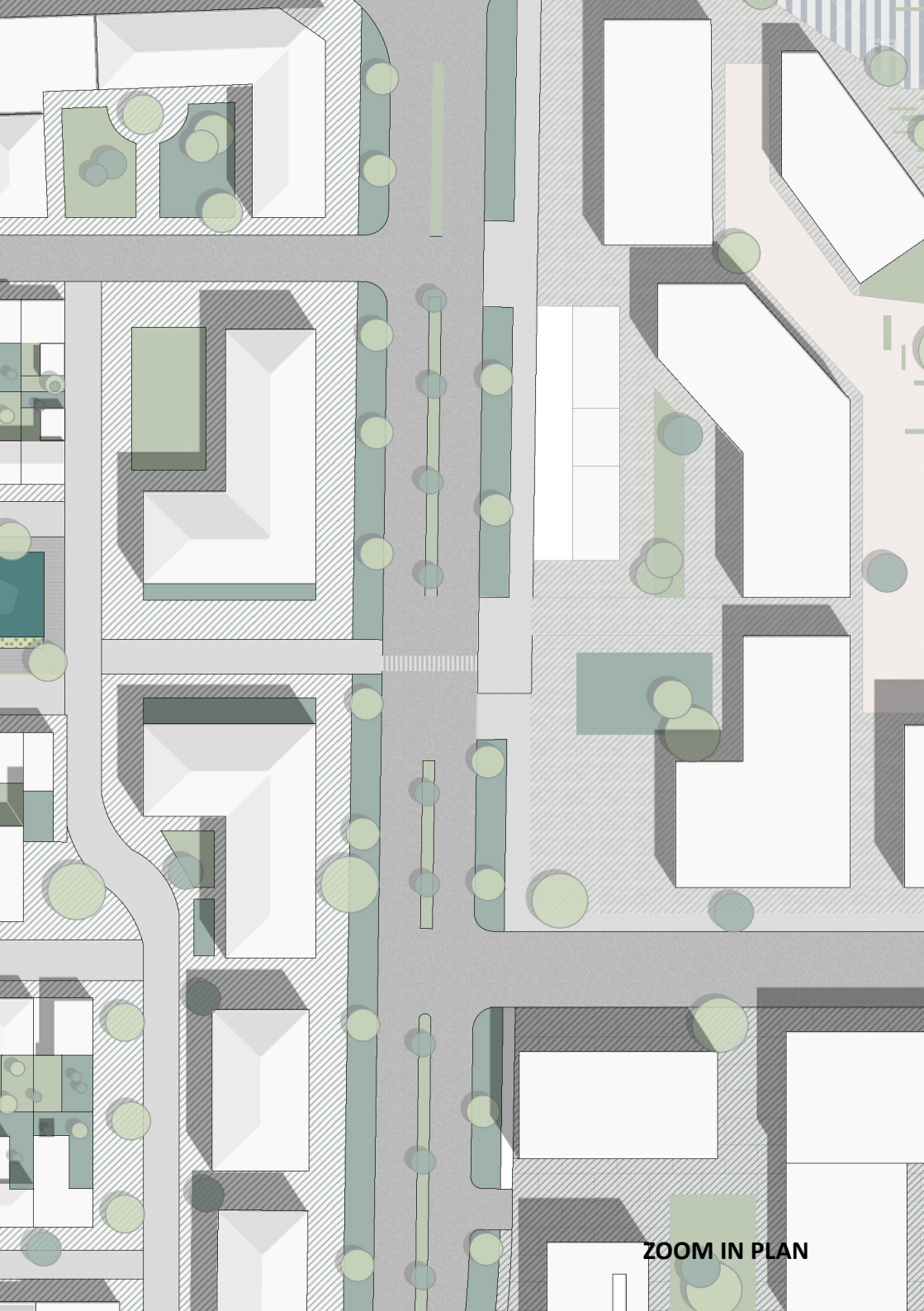






ZOOM IN PLAN





ZOOM IN PLAN





DEALING WITH FLOODS



**Existing Canal systems and Lakes
inside city**

- Create new canal link to existing
- Enlarge existing canal dimension



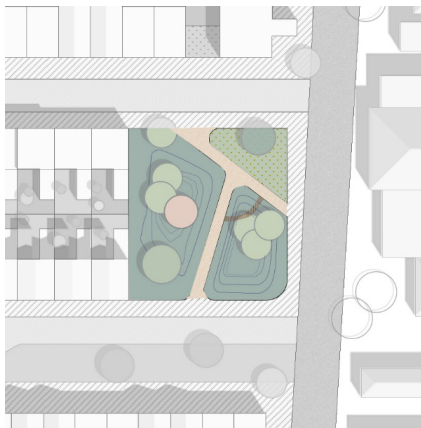
- Reclaim a portion of Boeng Kok Lake
- Spread out more lakes in neighborhoods

Enlarge flood sewage size to increase the water speed flow to river

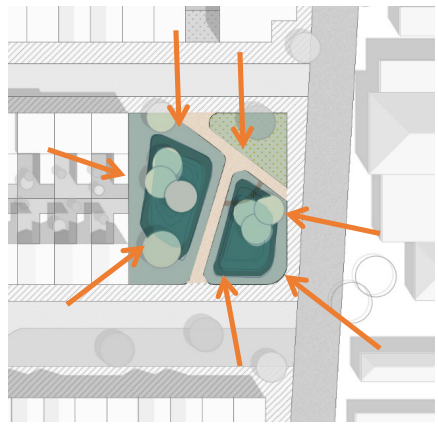
NEIGHBORHOOD SCALE



Water retention inside the parks and the lakes



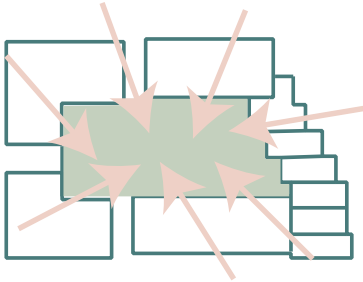
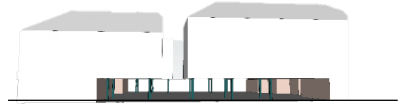
During Sunny day



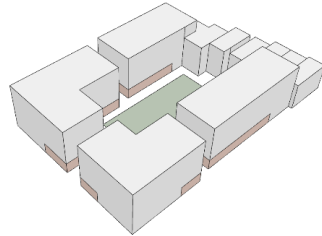
During Raining

UNIT SCALE

COURTYARD

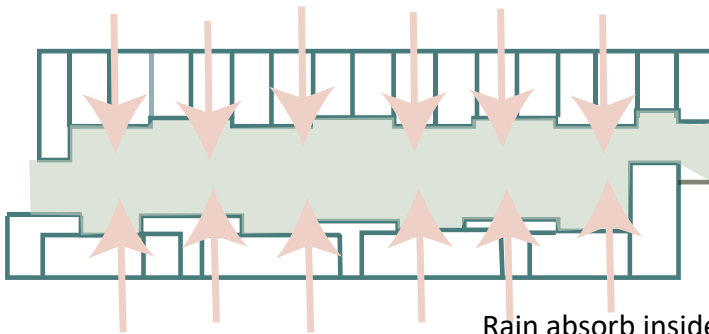


Rain absorb inside courtyard

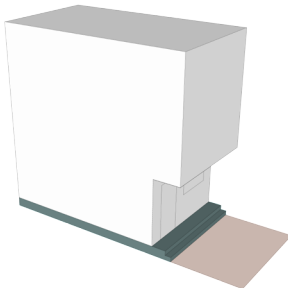


Migitage the flood by raising a floor up incase of serious flooding time

ROW HOUSE

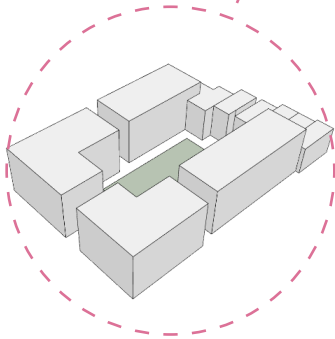
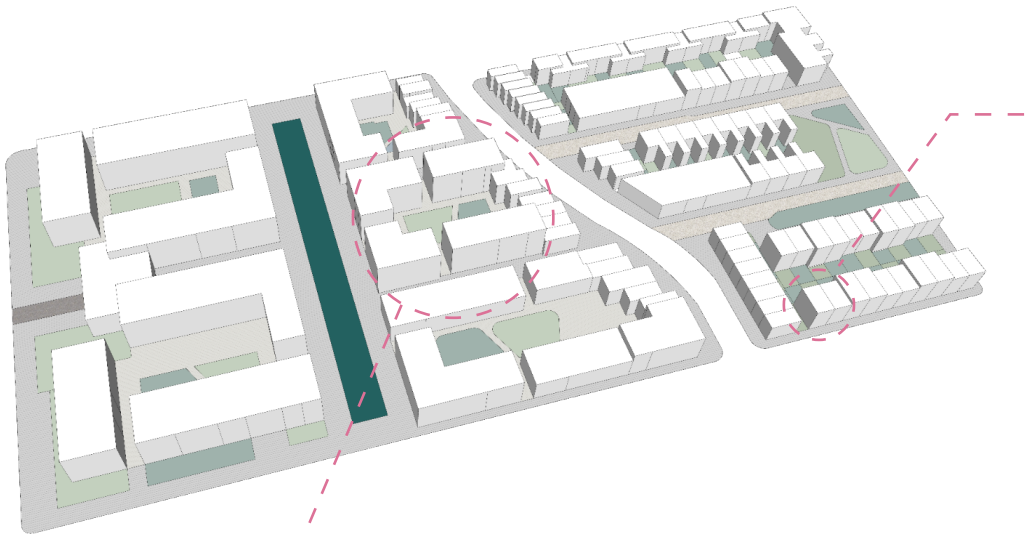


Rain absorb inside row house back yard

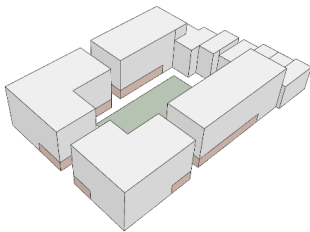


Mitigate the unit row house by raising up the ground floor by 30cm

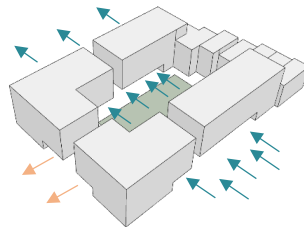
MICRO CLIMATE



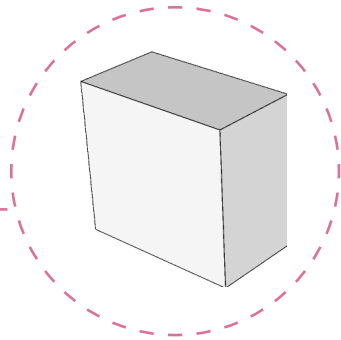
A sample of a courtyard



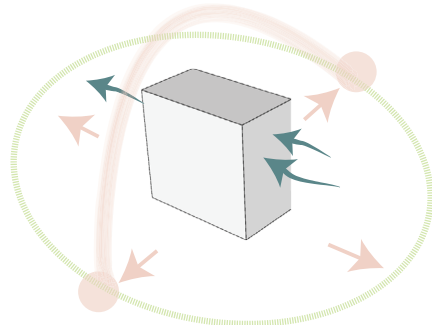
Raise a floor up



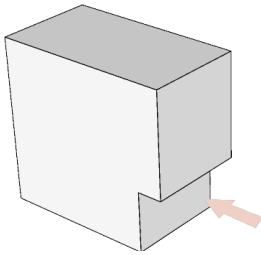
open floor for better ventilation and visual connection



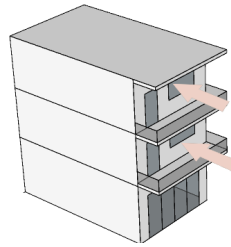
Row house



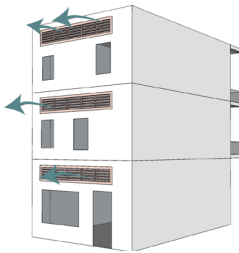
sun and wind directions



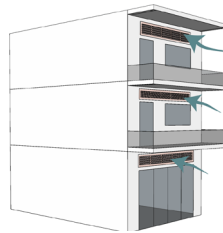
Push ground floor inside to create shade



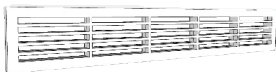
Install ventilation grill for all floors



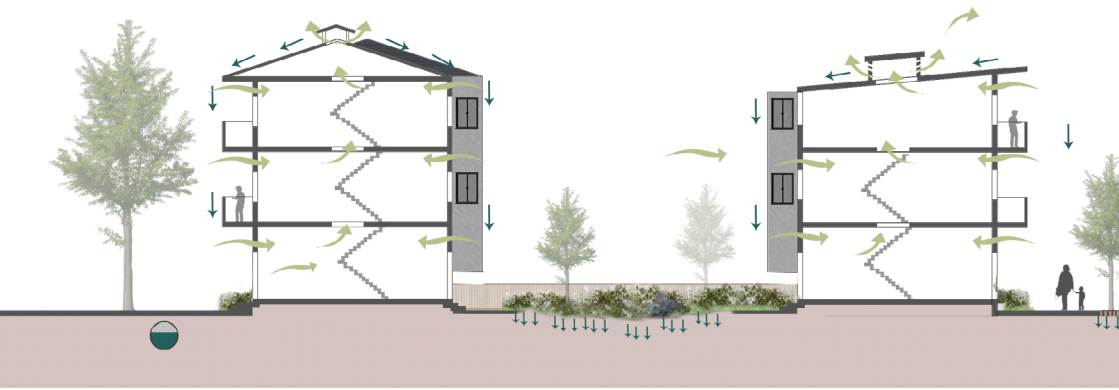
Ventilation blind back side

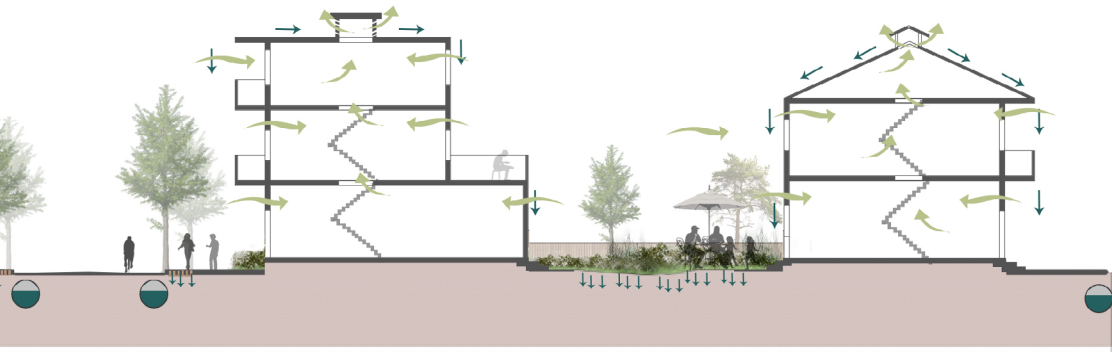


Ventilation blind front side



Ventilation blind/
grill





Section 1: Row houses in relation to backyard

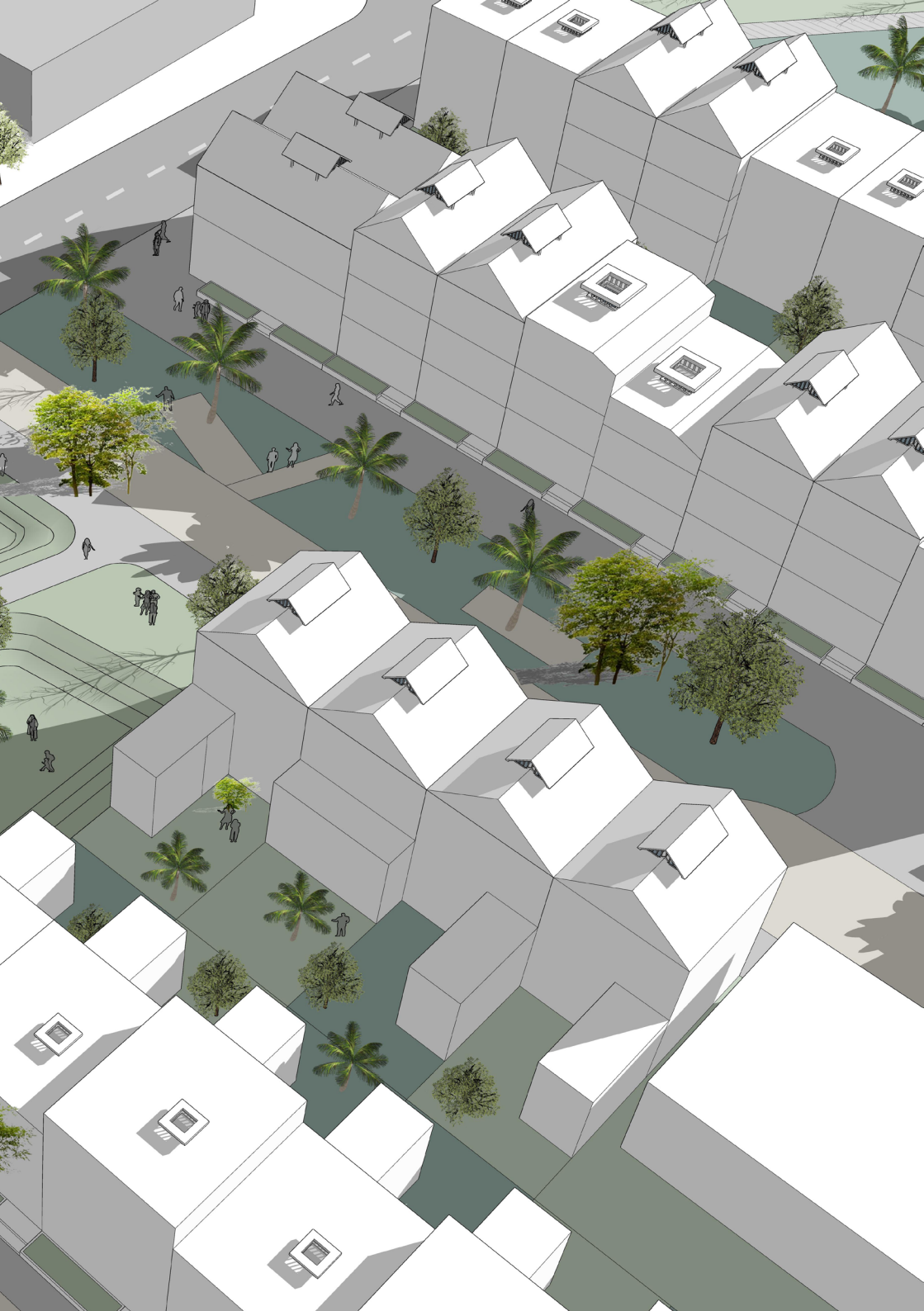


Section 2: Open courtyard in relation to canal and inner courtyard

















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