

SHAPING A GOOD SUPERBLOCK NEIGHBOURHOOD
In Transcona, Winnipeg

By Chengru Liang

*A practicum submitted to the Faculty of Graduate Studies
The University of Manitoba*

*In partial fulfillment for the degree of
Master of Landscape Architecture*

*Department of Landscape Architecture
Faculty of Architecture
University of Manitoba
Winnipeg*

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Landscape Architecture Practicum

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By Chengru Liang | August, 2014

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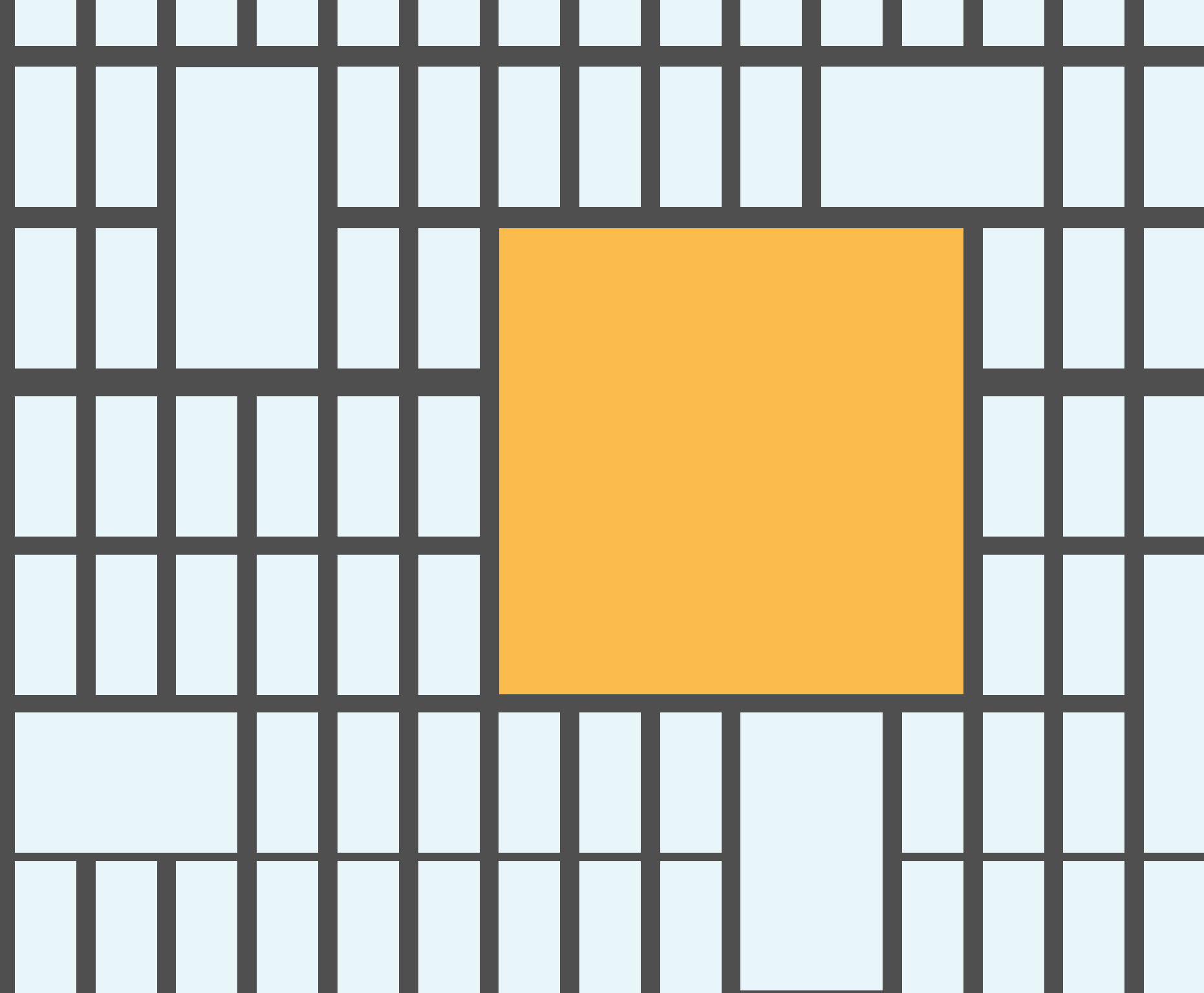
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ACKNOWLEDGMENT

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Finally, I wish to thank my parents for their love and encouragement throughout my study. In addition, thank you to my friends and classmates whose help and support gave me the strength to continually pursue an education in Canada.



ABSTRACT

Urban sprawl in North America and superblock in China are two typical urban forms with diametrically opposed density. However, when sprawl has been considered to be curbed, can superblock be a solution with its more compact urban form? This practicum is derived from this question and is focused on the research and design of shaping a good superblock. It is mainly driven by two research questions: how to use superblock model as a solution to curb urban sprawl and how to shape a good superblock neighbourhood from a landscape architecture perspective. There is a great opportunity to tackle such an inter-discipline topic from a landscape architecture dominated perspective, which could flexibly switch over context scales for this type of urban design. The topic would also be significant today due to an increased desire for ecological sustainability and cultural identity for neighbourhoods within the city.

Keywords: *urban sprawl, superblock, landscape architecture*

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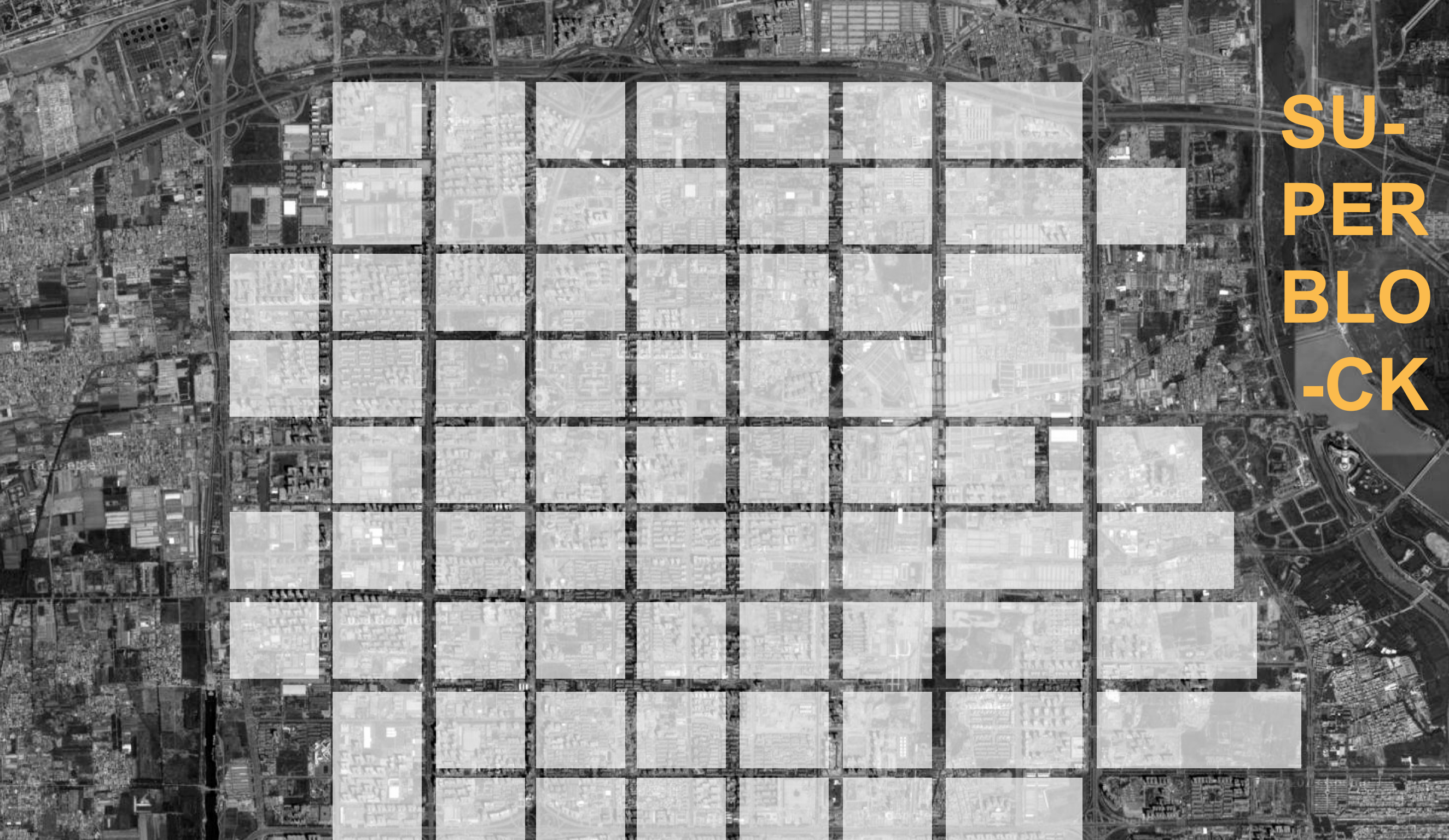
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SUPERBLOCK



INTRODUCTION

As rapid urbanization with large development parcels increasingly spread throughout contemporary world, from low-density subdivision sprawl in North American cities (Figure 0.1) to high-density superblock expansion in Asian cities (Figure 0.2), a series of problems such as automobile-oriented transportation development are continuously manifested. Road congestion, air pollution, energy consumption, ecological degradation, monotonous public space, decreased social interaction, loss of cultural heritage, are all problems which can no longer be

ignored by this critical urbanism issue. The situation is much more acute in higher-density cities of the East than in the lower-density cities of the West. North America has already started to restrict low-density subdivision sprawl (Lennon, Richard and Leo, Christopher, 2001) and asked for dressing denser and better urban development experiments related to new urban planning and design theories such as smart growth, low impact development, landscape urbanism and ecological urbanism. Although the aim of the high-density development in North America is different from Asia where there is rigid population density demand, I think it is still important for future urban development trend to create denser and better neighborhoods with resource saving, energy efficiency and diverse public environments. Nowadays, with the increasing global awareness on ecology and cultural identity, both the western and the eastern world are searching for a way to reshape denser neighborhood with ecological sustainability and cultural identity in sprawling metropolises. However, in the history of superblock, from the CIAM to Garden City Movement, from radiant city to garden city, from the pruit-igoe social housing development to Regent Park social housing communities to Battery Park City, the superblock neighborhood development had been dominantly driven by architecture, city planning, but less so from a landscape architecture perspective. In particular, landscape ecology and local spirit, which are all related cutting-edge landscape architecture research today, are not often considered. Consequently, I think it is a great opportunity to rethink this issue from a landscape architecture perspective. Therefore, in this practicum I am trying to re-examine the superblock model and explore innovative principles from landscape architectural design research to reshape a real high-density superblock at Park City Plaza (Figure 0.3) in Winnipeg (Cash, 2013). Through spatial design and landscape design with a concentration at the scale of the superblock neighborhood, the solution focuses on the sustainability of the ecological framework, the needs of individual on spatial qualities, the local cultural identity, sense of a living community and emphasis on design for habitat, ecology and human scale.

Figure 0.1 Low-density subdivision sprawl in Winnipeg, Canada



Figure 0.2 High-density superblock expansion in Xi'an, China



Figure 0.3 Selected Site of Park City Plaza in Transcona, Winnipeg, Canada



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1

THEORETICAL FRAMEWORK



- 1.1 Research Background**
 - *Urban Sprawl: Is urban sprawl a good urban form?*
 - *Superblock: Is it "high-density sprawl"?*
- 1.2 Research Question**
 - *Urban Form Comparison: Can superblock curb urban sprawl?*
- 1.3 Purpose and Rational**
 - *Intention and Carrier: build a superblock model to curb sprawl*
 - *Insight from History: discover superblocks*
 - *Comparison: a contextual urban form*
 - *Assumption: define a superblock model*
- 1.4 Research Methodology**
 - *Principle: a design solution for a planning problem*
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 - smart growth: infill and new(re)development*
 - *Design Practice: evolution of Chinese superblocks*
 - *Assessment by Perceived Density: compact and comfortable*
 - *Assessment by Lynch's Theory: performance from five dimensions*
 - *Summary for Future Design Optimization: opportunity for landscape architecture*
- 1.5 Site in Transcona**
 - *One of eleven projects on City Board: Park City Plaza*

1.1

Research Background

Urban Sprawl: IS URBAN SPRAWL A GOOD URBAN FORM?

Urban sprawl is the urban expansion model currently used in North America. It is mainly characterized by low-density, car-dependent and single-use residential development. Figure 1.1 shows a typical sprawl in New Mexico with the density and cost index. However, this development model is becoming increasingly controversial because of numerous problems. Sprawl destroyed abundant agriculture field and natural land around cities which influenced food production and urban ecosystems. The sprawling required laying miles of roads and sewer pipes, which increased the cost of providing and maintaining infrastructures. Once the road were built up, people have to rely on automobiles for daily commuting. More traffic causes more air pollution, while the highly car-dependent lifestyle isolated people's social connectivity. In terms of spatial quality, this single-use development with tons of uniformed buildings are really monotonous. However, this is the scenario that is currently seen throughout North America. We are slowly losing the identity of our neighbourhoods (Ewing, 1994; Gurin, 2003).

Low-density Development In North America

Adverse consequence

- *the loss of abundant agriculture field, forests, wetlands, prairies and other natural land around cities.*
- *an increasing cost of providing and maintaining infrastructures*
- *air pollution caused by automobile-dependent transportation*
- *losing neighbourhood identity among uniform building type and monotonous public spaces*
- *isolate people's social life*

Figure 1.1 *Subdivision urban sprawl in Albuquerque, New Mexico*
Photograph by Ivan Valiela, 2007. Used with permission from <http://hermes.mbl.edu/news/features/images/aerial.jpg> (accessed May 22, 2013)



1.1

Research Background

Superblock: A HIGH-DENSITY SPRAWL?

In recent years of rapid urbanization in many Chinese cities, the original urban fabrics have been gradually replaced by much larger plots with high-density buildings. This development model which enlarged the urban plot size and density of development has led to the emergence of a new urban typology called the “Superblock” (Fraker, 2006), and caused huge implications on the morphology of cities and urban life. The “Superblock” is usually large-scale urban living unit, which often resembles a neighbourhood, they are usually enclosed by infrastructure or natural barriers, such as mountain, water or roads (Hartog, Harry Den 2010, 412). In some cities such as my hometown, Xi’an (Figure 0.2), the plot size is approximately over 400mX400m and the FAR (Floor Area Ratio) is mostly above 2.0.

Figure 1.2 shows what a typical superblock looks like in Qingdao, China. It shares some characteristics with the North American urban sprawl. It is still consisted of single-use car dependent residential units but with a higher density than the urban sprawl model. The towers have also taking over a large amount of natural fields, including the mountains from the image. The high-density encourages more car use which causes more air pollution, and more construction cost for wider roads and underground parking. People commute by driving, using elevators that lead directly from their home to the parking lot below, eliminating the chance to be outside and isolating people’s social life. These superblocks are usually gated with limited entry and no through traffic. Open space and public transportation are segregated which caused a lack of possible connectivities in the urban context, limiting the superblock from being integrated within the city fabric. Therefore, this kind of superblock expansion in China is somehow “a high-density sprawl”.

High-density Development In China

Share the same characteristics

- *the loss of abundant agriculture field, natural land around cities*
- *reducing cost of road and pipes but increasing underground parking structure*
- *wider roads, more cars, more air pollutions*
- *still monotonous buildings, losing neighbourhood identity*
- *Car-dependency isolated people’s social life*

Figure 1.2 High-density development in Qingdao, China

Photograph by Wu Hong from newscientist, nd. Used with permission for academic from <http://www.newscientist.com/blogs/shortsharpscience/2012/12/megacity-china.html#more> (accessed June 7, 2013)



1.2

Research Question

Two Urban Form Comparison: CAN SUPERBLOCK CURB SPRAWL?

Superblock has been a typical high-density urban form in China for decades. The left part of the Figure 1.3 shows what a typical superblock looks like in China: a group of large development parcels with dense, repetitive residential towers piling up in the city. Currently, this model is dominating the marketing-rate housing development in China for decades. I grew up in this superblock housing condition and have an intimate experience with it. I didn't understand the implications of such development until I began to learn the urban form research in Canada. An interesting thing I found when I was comparing urban forms between North American and China is that there is another typical urban form for housing in North America, urban sprawl (shown on the right side of the image). Through the comparison study, It is somehow an urban form shock for me. They share some characteristics of sprawl but each has their own problems. Apparently, there is a dramatic density difference, but are they opposite, complementary or similar? Are they good or bad? When people talking about curb sprawl or control density, can superblock be a solution with its density advantage? Otherwise, is there anything wrong with the density? These questions all guide me to research on this topic in Canada.

Obviously, sprawl density is a fundamental issue within this problem. Every problem-solver is asking for increasing density. However, can high-density curb sprawl? In terms of Chinese superblock, we noticed that high density can still be a "high-density" sprawl. If the essential problem of sprawl is not about high-density itself, what is the root reason that caused sprawl with "high-density"?

Yes, the problem is not density itself but the way in which we design with density.

Figure 1.3 Urban Form Comparison, China

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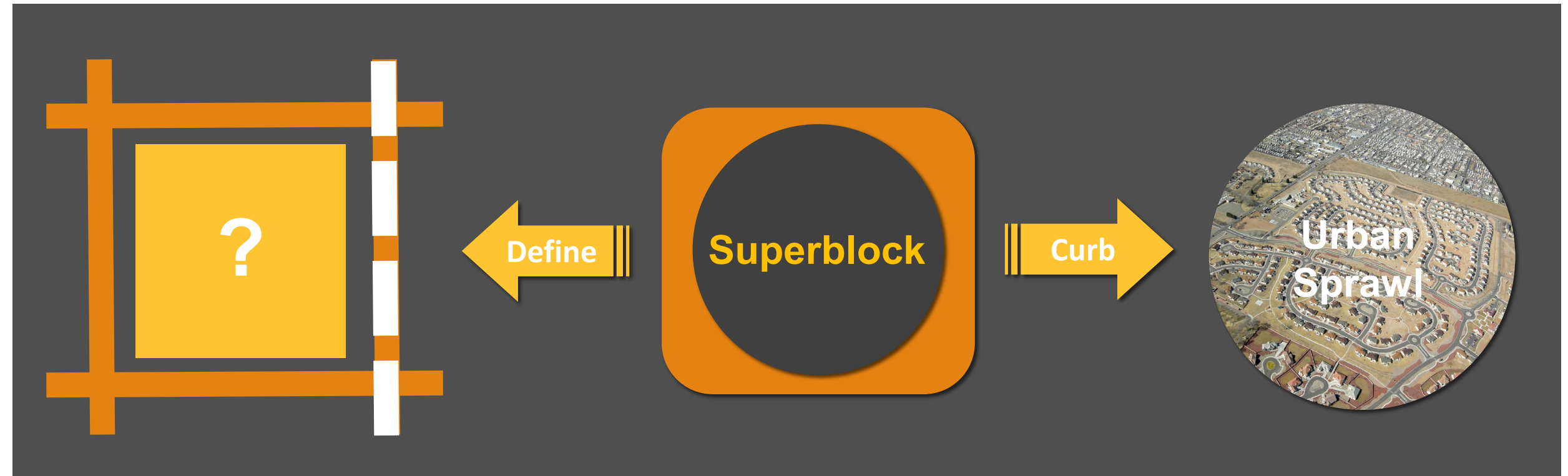
1.3

Purpose and Rationale

Intention and Carrier:

BUILD A SUPERBLOCK MODEL TO CURB SPRAWL

Figure 1.4 showed us the intention of this practicum and its carrier. Since I learned sprawl is not due to density itself but the way in which we design the density, superblock of high-density would have a strong potential to curb urban sprawl if we could explore the right way to manipulate the density. A proper superblock model will be a carrier for holding these density to finally shape a compact urban form. So in further research, the superblock model has to be quantitatively defined.



1.3

Purpose and Rationale

Insight from History: DISCOVER SUPERBLOCKS

During the discovery of superblocks, I found superblock does not only exist in China but also around the world. It has been on the earth for over half a century since it was born in CIAM period. The rudiment superblock model would be Radiant City which was advocated by Le Corbusier, the greatest master of architecture modernist in 20 Century (Badger, 2012). Is this outdated or still valuable for today, or even future? From the discovery of some superblock precedents around the world (Figure 1.5-1.9), I found superblock models have developed through several life cycles in history. For examples, some superblock projects have already demolished, such as Whitfield (Figure1.5) and Pruitt-Igoe (Figure1.6) shown in black and white; while superblocks in Rostock and Stuyvesant Town-Peter Cooper Village in New York are still in service; and some are newly built in most new suburb development in China. Figure 1.9 shows a typical superblock development in New Suburb, Beijing.

Although there are a series of problematic precedents, it is hard to say whether those demolished projects are failures or whether those alive or new born projects are successful. Because, in different periods, there are different missions to be achieved. Due to the increased housing demand, improved transportation technology, new construction materials and advanced building technology, I think there is still a role for superblock to play in future, but it might need to be reborn for implement. What we should do is to learn from our achievements and mistakes in superblock design, and to develop more desirable superblocks for peoples' living environments with consideration for current conditions.

Figure 1.5 *Whitfield, (the skarne blocks) Dundee, Scotland, 1960s*
Photograph by Mark Wallace. Used with permission from <http://www.thisismarkwallace.co.uk/Whitfield%20A.html> (accessed August 10, 2013)



Figure 1.6 *Pruitt-Igoe, St. Louis, Missouri, 1956-1970*
Photo from United States Geological Survey. Public domain. Reproduced from <http://en.wikipedia.org/wiki/Pruitt-Igoe#mediaviewer/File:Pruitt-igoeUSGS02.jpg> (accessed August 10, 2013)



SUPERBLOCKS AROUND THE WORLD

Figure 1.8 *Stuyvesant Town-Peter Cooper Village, New York, 1947s*
Photo from Imgur. Public domain. Retrieved from <http://i.imgur.com/7qxNl.jpg> (accessed September 5, 2013)



Figure 1.7 *Rostock, Germany*
Photograph by Gerhard Launer. nd. Retrieved <http://www.zeit.de/reisen/2013-08/fs-deutschlands-staedte-von-oben/seite-12> (accessed September 1, 2013)



Figure 1.9 *Suburb Beijing, China, 2000s*
Photograph by Matthew Niederhauser. Used with permission from <http://www.matthewniederhauser.com/visions-of-modernity/> (accessed September 10, 2013)



1.3 Purpose and Rationale

Comparison: A CONTEXTUAL URBAN FORM

It is not hard to understand the attributes from those selected superblocks around the world. They are all large parcels with denser buildings inside and enclosed by clear boundary such as railway, arterial roads or the ocean, but the parameters of the size and density is very contextual. To create an accurate superblock model for curbing sprawl in this practicum, the parameters for a proper density and size must be set. A comparison study was conducted among some precedents from Europe, North America and Asia, in order to define an appropriate parameters for the superblock model.

The size and density of conventional urban blocks varies greatly in different cities. As shown in Figure 1.10, even the size of regular urban blocks differs largely in different cities, so that the superblocks in different cities (Figure 1.11) are more difficult to compare. In Figure 1.11, the size ranged from 2.7ha to 47.6ha, depending on the context. However, one interesting thing was found when I located the schools for those blocks. All the school system served similarly sized areas. Sometimes, the catchment

area includes two large blocks, sometimes it is one super larger block, because they are all closed to a neighbourhood size. The size of most Chinese superblocks are closed to or over the neighbourhood size, so I picked a starting size of approximately from 400mX400m for a superblock model which refers to most Chinese superblock neighbourhood condition for the background I am familiar with.

Figure 1.10 Conventional urban block size of different cities throughout the world

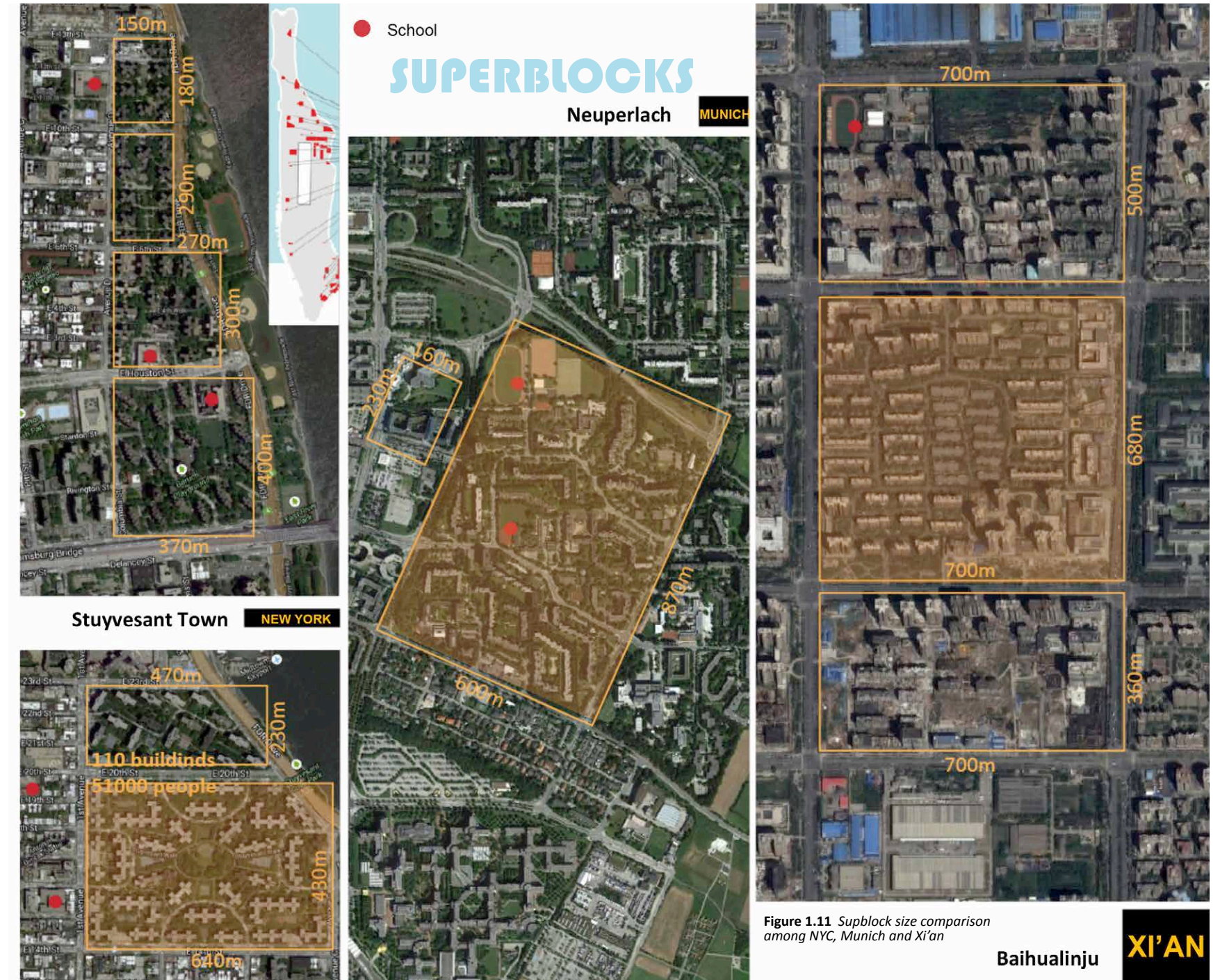
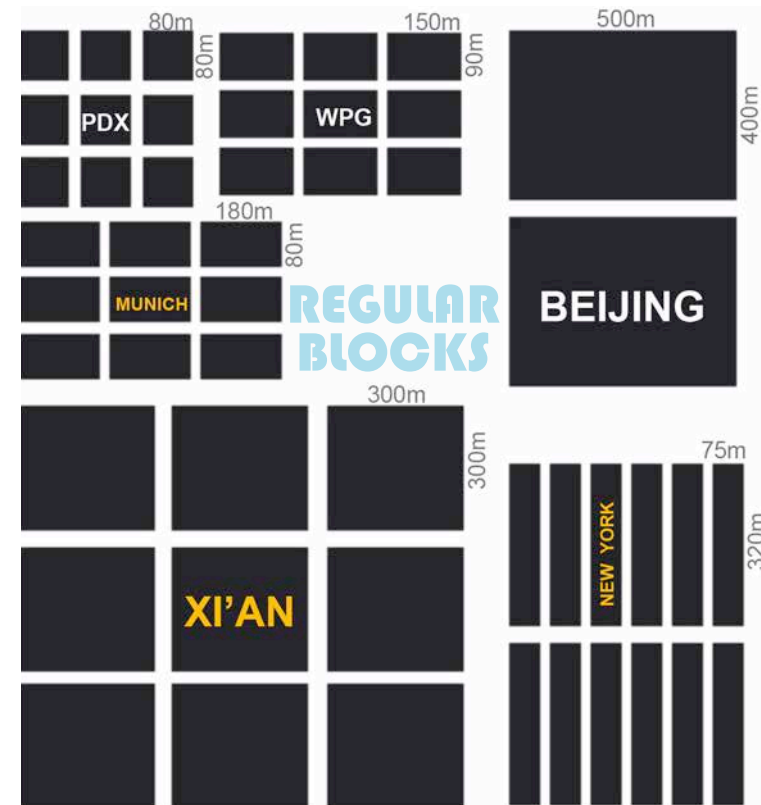


Figure 1.11 Superblock size comparison among NYC, Munich and Xi'an

1.3 Purpose and Rationale

Assumption: DEFINE A SUPERBLOCK MODEL

According to the superblock comparison research, I assumed some specific parameters for the superblock definition which refers mainly to Chinese precedents but satisfies the average level around the world.

In this practicum, Superblock is defined as a much larger urban plot with denser buildings compared to the regular city block. It is at least 400m by 400m in size, with a population density of 300 people/ha or a unit density of 150 units/ha, and is usually developed as a whole property to form an introversive neighbourhood and enclosed by regional infrastructure such as railway, natural borders, arterial roads and so on, sometimes with limited access or through traffic as well.

This quantitative index parameters are mainly refer to surperblock precedents in China.

Figure 1.12 Definition of superblock model

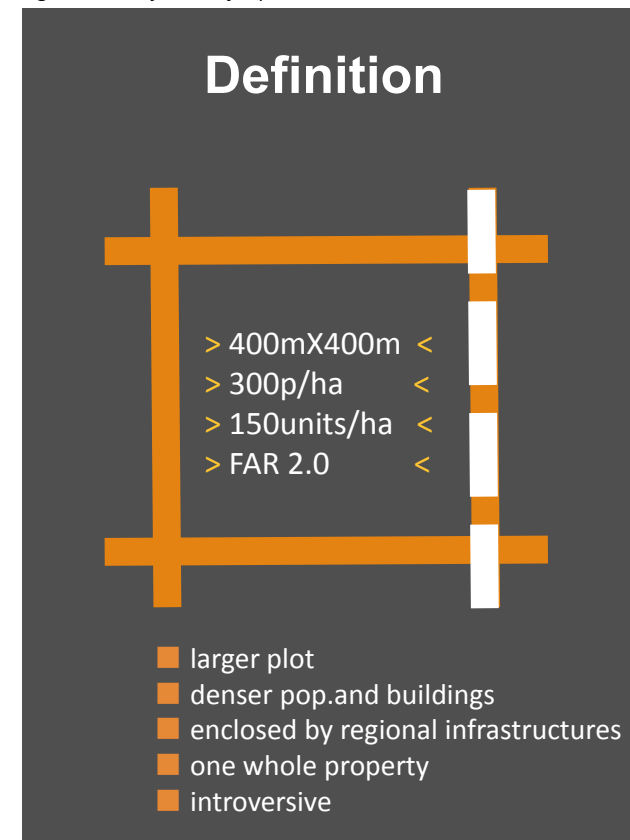


Figure 1.13 Isometric illustration of supblock model

1.4 Research Methodology

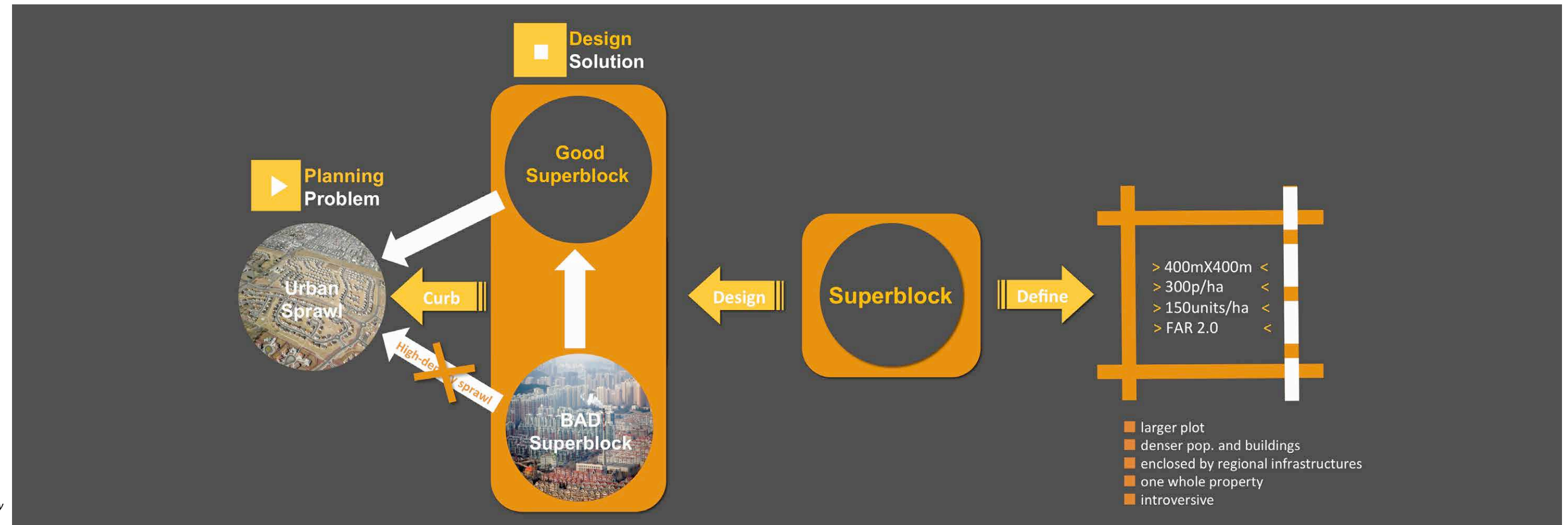
**Principle:
A DESIGN SOLUTION FOR A
PLANNING PROBLEM**

Once the superblock model has been well defined, the potential carrier was born, which will transform the high-density figure to a compact urban form through good design. Otherwise, it will become a disaster like the “high-density sprawl” in China or dead superblock housing projects around the world as I’ve showed before.

So the principle for shaping a good super block to curb sprawl is to form a design solution for a planning problem (Figure1.14).

Figure 1.14 Principle for research methodology

Figure 1.14 Principle for research methodology



1.4

Research Methodology

Approach:
PLANNING THEORY AND DESIGN PRACTICE

So when we rotate the principle diagram to put the good superblock on top, the two approaches for the goal becomes clearly highlighted in Figure 1.5.

One hand is to curb the problems of sprawl due to planning, which is pretty much about framing a structural network in regional context based on related planning theories and figuring out design requirements for future design tasks.

The other hand is to optimize the design problems of superblock precedents, which will be summarized from a series of assessments.

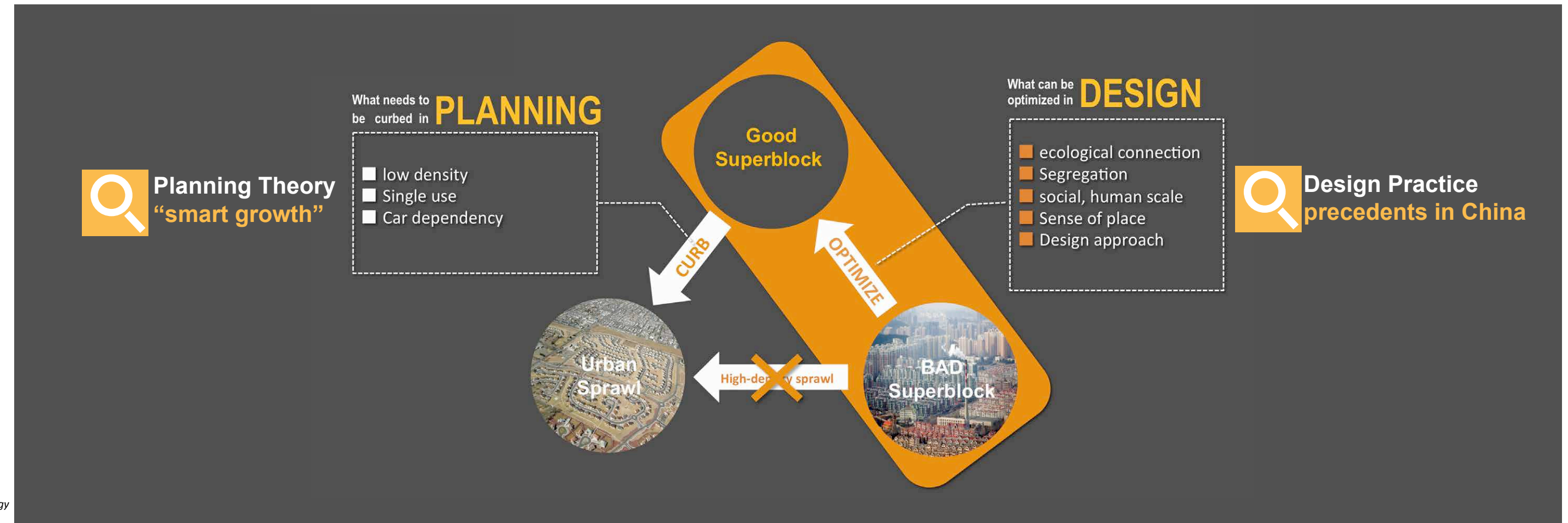


Figure 1.15 Approach for research methodology

1.4

Research Methodology

Planning theory: CURB SPRAWL WITH “SMART GROWTH”

Urban sprawl is becoming one of the major threats to urbanization, but urbanization is not inevitable. There is a need for people to be more aware of this problematic development model and consider innovative ways to create denser urban form (Thompson, 2013).

Attempts to curb sprawl are not new. The term, “Smart Growth” has evolved rapidly in the United States from mid-1990s to illustrate an integration of alternatives to “problem growth.” (Agyeman, Tregoning, Shenot, 2002) Smart growth assumes that cities will grow, and achieve six goals with ten basic principles and three driving forces (Shrivastava, Sharma, 2011).

In terms of the three driving forces in smart growth, the essential issue is to deal with the increased urban housing development following the population boom.

3 DRIVING FORCES

- Compact neighborhoods
- Transit-oriented development
- Mixed land use

6 GOALS

- Neighborhood livability
- Better access/less traffic
- Enabling pre-existing cities, suburbs, and towns to thrive
- Shared benefits
- Lower costs/lower taxes
- Preserving open space

10 PRINCIPLES

- Mix land uses
- Take advantage of compact building design
- Create a range of housing opportunities and choices
- Create walkable neighborhoods
- Foster distinctive, attractive communities with a strong sense of place
- Preserve open space, farmland, natural beauty, and critical environmental areas
- Strengthen and direct development towards existing communities
- Provide a variety of transportation choices
- Make development decisions predictable, fair, and cost effective
- Encourage community and stakeholder collaboration in development decisions.

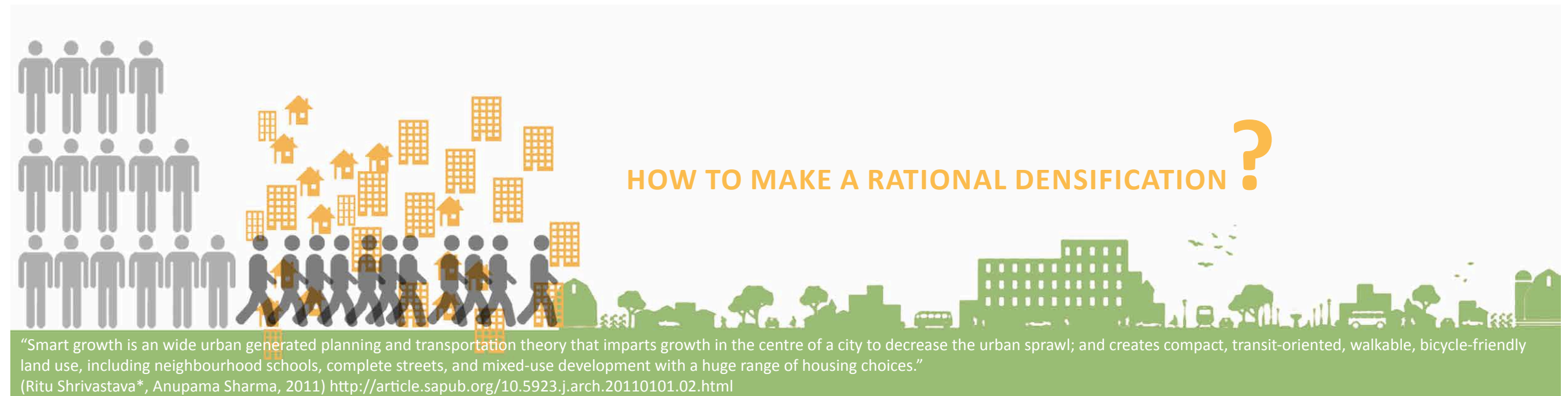


Figure 1.16 Illustration of smart growth theory

1.4 Research Methodology

Two typical ways for smart growth: INFILL & NEW (RE)DEVELOPMENT

Smart Growth asks for control of the sprawling urban development boundary and stimulates new neighbourhood development to be higher density or pre-existing low density residential area to be infilled (Figure 1.17).

In North America, there is a relatively small population living in a large land mass. Sprawl does not have to be the urban future here. Smart growth has been highly encouraged to guide a urban development revolution in recent years. It is possible to set boundaries around urban development, and within these boundaries, there are generally two type of area for the future housing development. One is the built-up area which usually are the pre-existing neighbourhood, while another is the unbuilt-in area which usually are brown field or abundant field. So there are two strategies to deal with these two different development situations respectively, Infilled neighbourhood development and new neighbourhood development with higher density, which are usually mixed-use communities that integrate homes, work, shopping, schools and all the amenities of modern urban life (Agyeman, Tregoning, Shenot, 2002).

Superblock model can be applied to new (re)development projects.

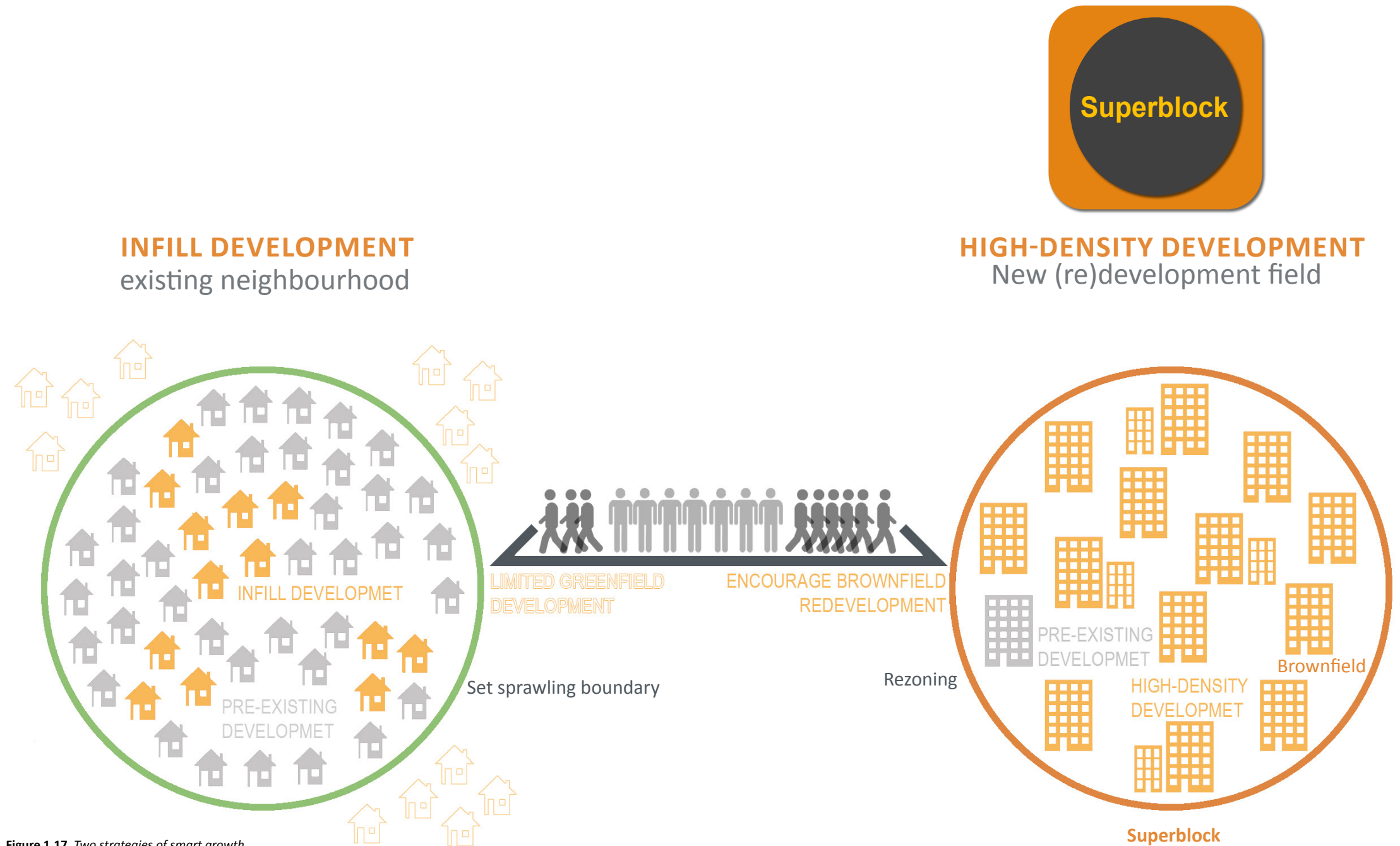


Figure 1.17 Two strategies of smart growth

1.4

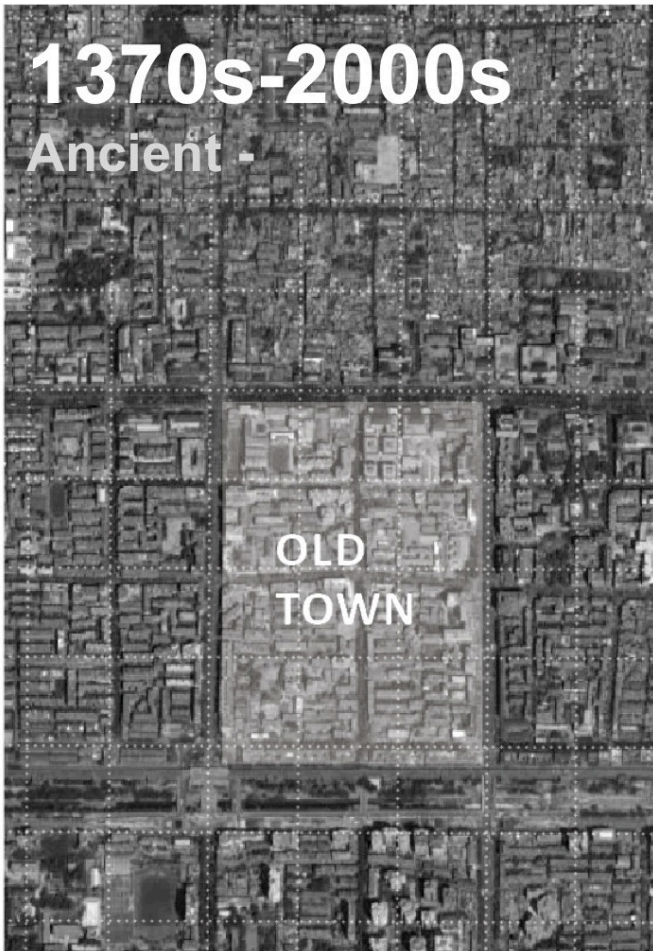
Research Methodology

Design Practice:
EVOLUTION OF CHINESE SUPERBLOCKS

As the rigid housing demand from the large population in China, Superblock practice have been for over five decades. To learn the lessons from this long evolution journey of Superblock practice in China. I examined three typical superblocks (Figure 1.18) from their periods, from generation to generation, and compared to the traditional old town urban form in similar size to figure out what we have achieved in superblock practice and what mistakes we have made in superblock projects. Thus we can summarized these experience to help us to make more desirable superblocks for future.

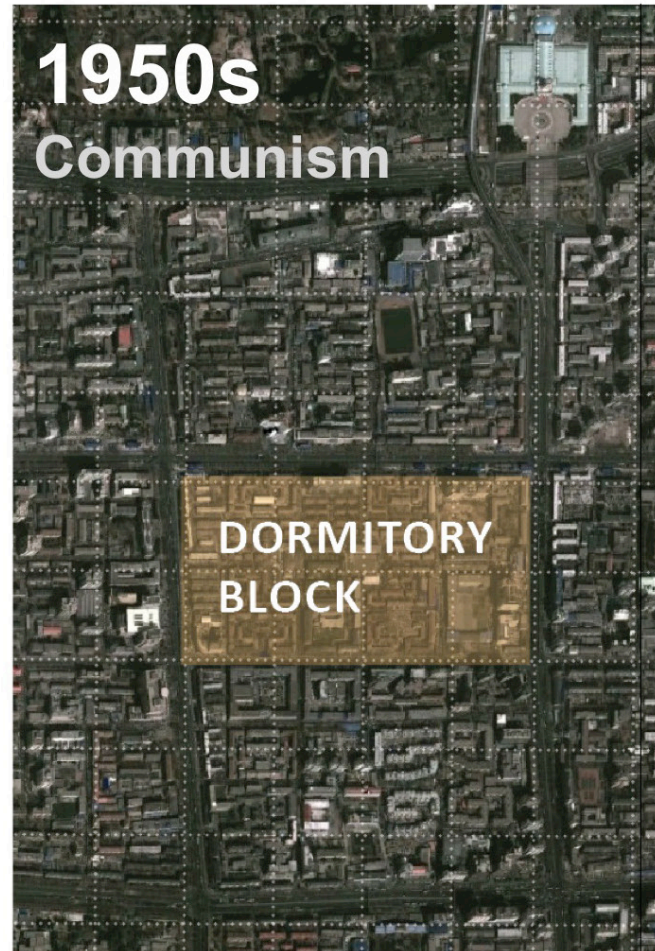
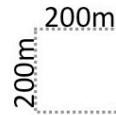
Old town, Xi'an

Population density: 350p/ha
 FAR: 1.3
 Living space per capita: 15sqm



Dormitory block, BJ

Population density: 277p/ha
 FAR: 1.1
 Living space per capita: 25sqm



New suburb, Xi'an

Population density: 353p/ha
 FAR: 2.0
 Private living space: 40sqm



Super high rise, HK

Population density: 500p/ha
 FAR: 3.68
 Living space per capita: 55sqm

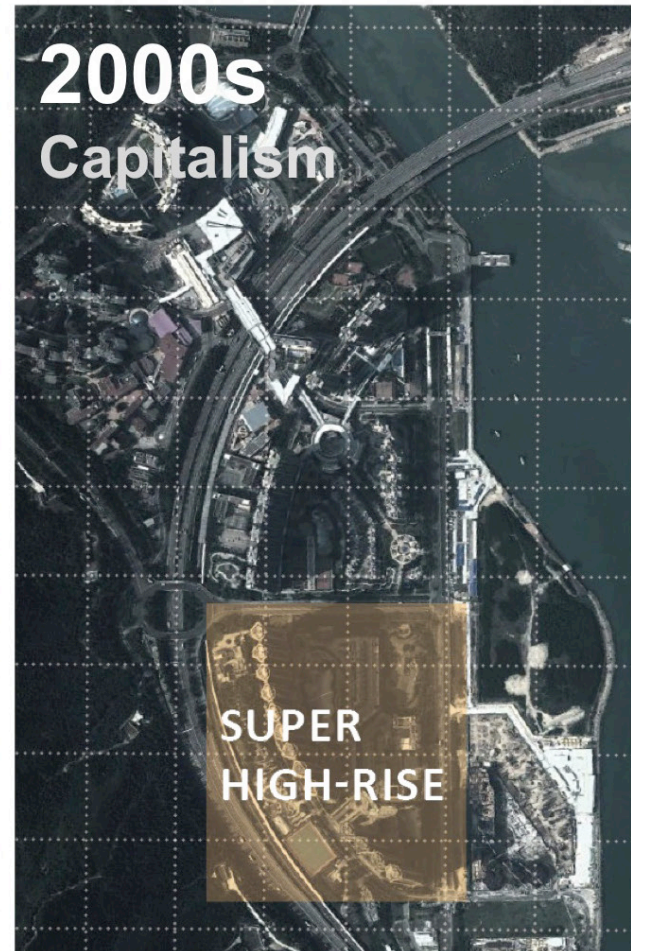


Figure 1.18 Evolution of Chinese superblocks

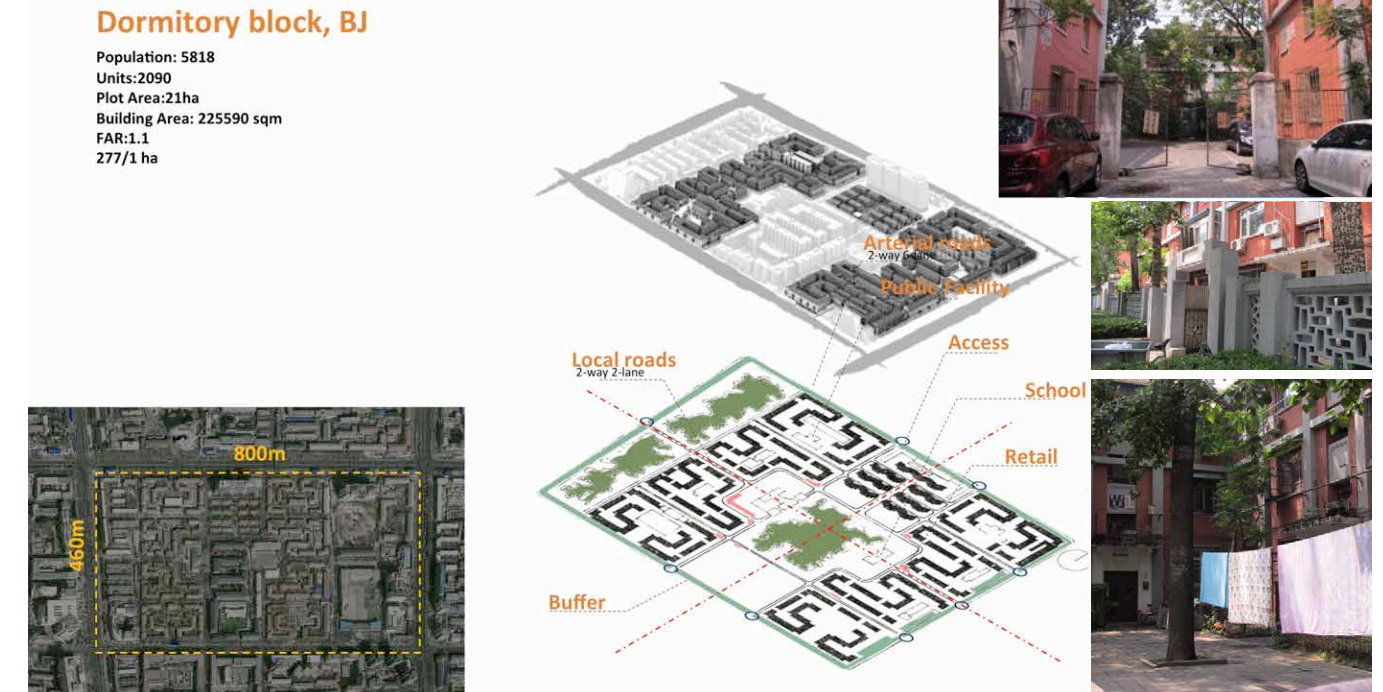
1.4 Research Methodology

Figure 1.19 Illustration of Old Town Xi'an



The selected section of the old town in Xi'an is about 600m x 800m, where is adjacent to the southern side of Ancient City Wall and enclosed by two way 4 lane roads on other three sides. The whole site had been broken into 7 plot subdivisions with branch access lanes inside. The building district and path system is organic, diverse and walkable. The buildings have been renovated along historical context, from the Southern City Wall to the other side, the buildings have distributed from low to high, from traditional to modern, from court yard to linear slab spot tower. Each subdivision has their own small random open space. It is a vibrant open block which is mixed-use with diverse environments, It is pedestrian friendly and better for social life with a strong local sense, but some places usually are seamed chaotic and a bit out of control.

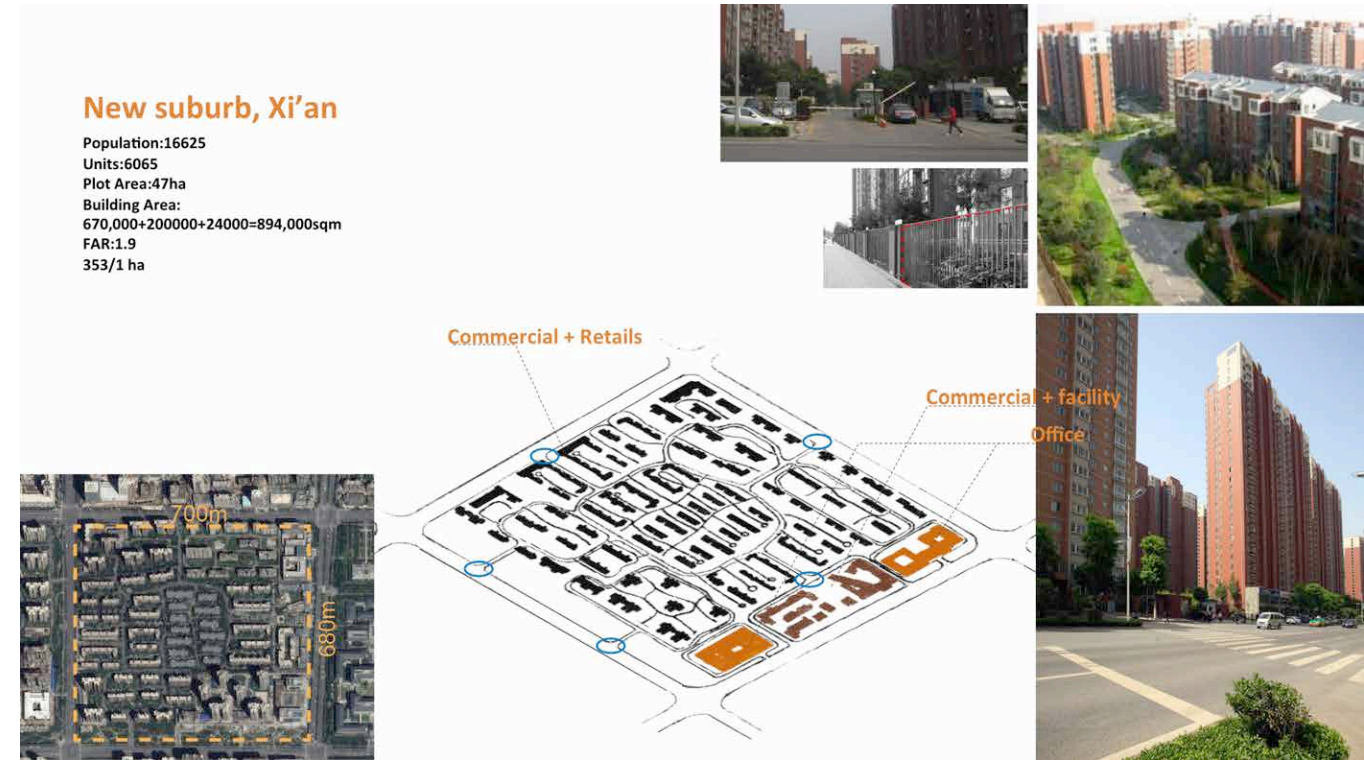
Figure 1.20 Illustration of dormitory block, Beijing



This Dormitory block called Bai Wan Zhuang, which is located in Beijing. It is a typical communism housing product (soviet style). It is about 800m X 460m, with an geometric orientation. The whole residential block was enclosed with buffer around and there was originally a public green space in the centre. These housing was provided by the institute to the employees who work there for free. Everything was well controlled with a strong institute culture. Settlements there are familiar with each other, full of family feeling here, but the dormitory block was still isolated with other part of the city. The private living condition is a bit economically efficiency, very simple renovations.

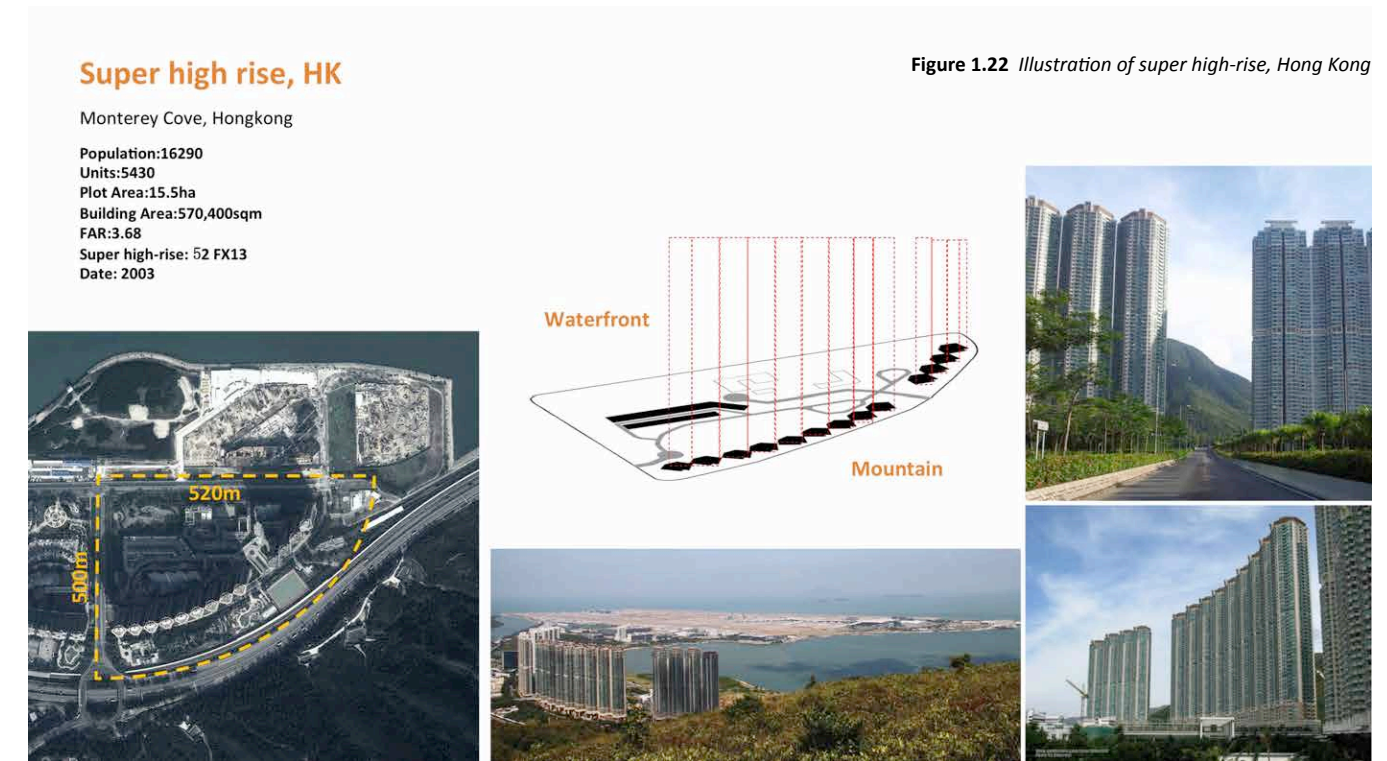
1.4 Research Methodology

Figure 1.21 Illustration of new suburb, Xi'an



Bai Hua Lin Ju is a typical marketing-rate gated block in today's China. It is a typical high-density superblock, with well gated control and better environments inside. It is about 700mx800m enclosed by arterial roads and with a loop driving path in side. It connected with three gated exits. The building layout was intensive, low-story building in middle and high-rise around, It maximum used the capability for spacing limitations. There is no big pen space inside. The commercial and public buildings were set along the boundary, gathered at the entrance. The whole neighbourhood looks monotonous with the uniformed buildings in row or in line. The building quality is good but people's social connections are isolated. Residents are all from different place to live together, they do not know each other too much. The developer decided the sense of the place.

Figure 1.22 Illustration of super high-rise, Hong Kong



The super high-rise in Hong Kong is another representative superblock. The project above called Monterey Cove. It is about 15ha with a closest metro station with 400m. There are thirteen 52-story residential towers in side which laying against the mountain, facing the harbour. There is a huge open space with rich living facilities. However, the building foot prints only took 15% of the site. It is a closed block but open to the environment; super high-density but transit-oriented. The only concern is elevator issues, and people's mental health, it has reported a few people suicide every year.

1.4 Research Methodology

Assessment by Perceived Density: COMPACT AND COMFORTABLE

There is no doubt that density is the fundamental attribute for create a superblock with a compact urban form. But Is compact form comfortable? It has to be told by people's experience. Does the density figure matters the quality of superblock living? What dimensions would dominate the performance of a superblock from people's experience? In fact, when you experienced the different superblocks, you may find the numbers of density itself does not explain too much about people's feeling. But people recognize the density of a place according to their physical and mental perception. There are so many indirect dimensions will influent people's perception of the space.

The Architect from Netherlands, Neville Mars, proposed a notion about density perception. It is a formula density which are generated from diverse environmental factors. The perceived density diagram is a flexible measurement of performance within intrinsic density space. It mainly includes five variables: The height of the surrounding buildings; the footprints of buildings; the spacing between buildings; the viewing scope to resident have access; the amount of outdoor private space (Mars, Nevill, 2008). The irregularity of black pentagon takes into account. The varying significance of theses factors upon overall perceived density. Plotting points on the five axes yields the perceived density graphically — an orange pentagon whose shape and area are an illustration of perceived density. In Figure1.23, I am using this method to measure out the secret of density from these superblock precedents.

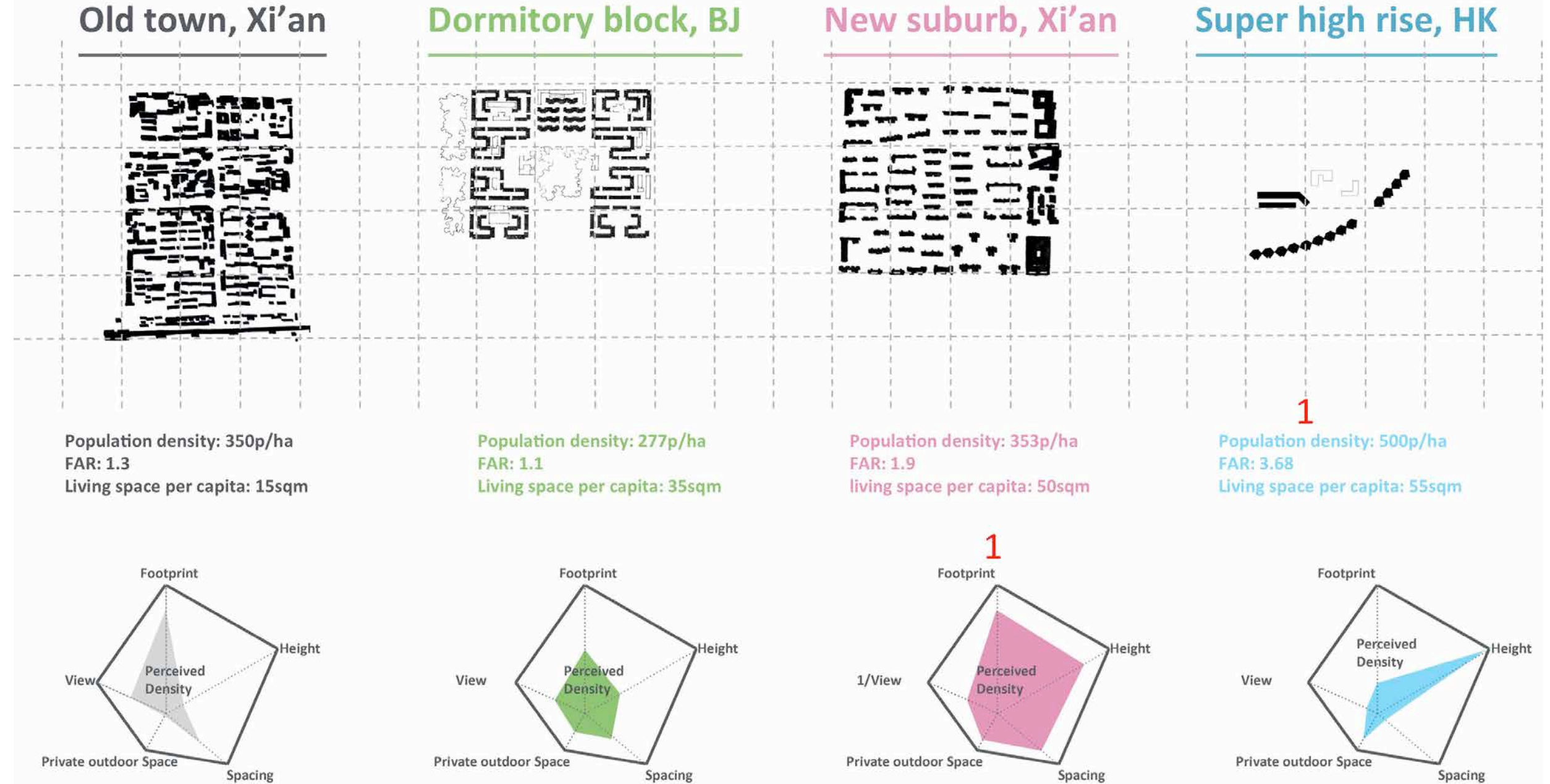


Figure 1.23 Illustrative comparison of perceived density

1.4 Research Methodology

Assessment by Lynch's Good City Form Theory: PERFORMANCE FROM FIVE DIMENSIONS

This graphic (Figure 1.24) summarized the performance of each superblock precedents from five dimensions, Vitality, Sense, Fit, Access and control, which are based on Kevin Lynch's theory of assessment of a good city form (Lynch, 1984). The diagram was composed by the observation of each superblocks. The height of the bar chart represents the quality and the width represents the influence in each dimension. So it is easily to read the level of quality and influence about each category of that project.

For example, the old town, Xi'an precedent has a stronger local sense than the new suburb, Xi'an project and other projects. But the old town has a very chaotic control, which strongly influences the better sensing quality a lot. While the new suburb has both strongest quality and influence in control, because which are usually gated by the fence, building gate and safe guard doors, which tried to keep the safety but highly segregated the social connectivity...

Performance of Superblock



Lynch's theory of good city form, based on "Good City Form", by Kevin Lynch, 1984.

Figure 1.24 Performance comparison of superblock precedents



1.4

Research Methodology

Summary for Future Design Optimization: OPPORTUNITY FOR LANDSCAPE ARCHITECTURE

From the performance comparison (Figure 1.24), it is easy to summarize the dominated problems from each dimension for future design optimization.

- lacks ecological connection (VITALITY)
- segregated by the gated boundary (FIT)
- lacks social connectivity or human scale (CONTROL, ACCESS)
- lacks a clear sense of place (SENSE)
- design approach through separated disciplines (CONTROL)

Obviously, most problems are associated with landscape architecture research, such as ecological connection, social connectivity and sense of place. Moreover, in my research, I found most cutting edge research works in landscape architecture today are frequently highlight its value in urbanism. For examples, the three books shown in Figure 1.25 are all the cutting edge landscape architecture theories, which help to build ecological sustainability and culture identity that are all current neighbourhood design are searching for throughout the world. So there is a great opportunity for landscape architects to contribute for future superblock.

neighbourhood design.

Figure 1.25 Three selected books of urbanism from landscape architecture perspective



Figure 1.26 Summary for future design optimization

What can be optimized in **DESIGN**

- lacks ecological connection (VITALITY)
- segregated by the gated boundary (FIT)
- lacks social connectivity or human scale (CONTROL, ACCESS)
- lacks a clear sense of place (SENSE)
- Design approach through separated disciplines (CONTROL)

1.5 Site in Transcona

One of Eleven Projects on City Board: PARK CITY PLAZA SITE

To advocate smart growth, the city of Winnipeg has proposed 11 mixed-use high density development projects throughout the city. One of them called Park City Plaza in Transcona (complete community), I picked it as the site (Figure1.27),

The triangle site of 16 ha is located in Transcona, and closed to the intersection of Regent and Plessis. It is enclosed by two arterial roads and CNR rail line. It is a whole property of the City of Winnipeg, which has been used as a city yard (Figure1.28, Figure1.29). And a developer has already made a proposal for the city (Figure1.30), which is a mixed-use, high-density redevelopment, includes BRT transit and some public facilities, a new Transcona Library and Recreation Centre and over 1100 units. So it fits the definition of superblock and satisfied with potential positioning for curbing sprawl.

Figure 1.27 Site location in Winnipeg

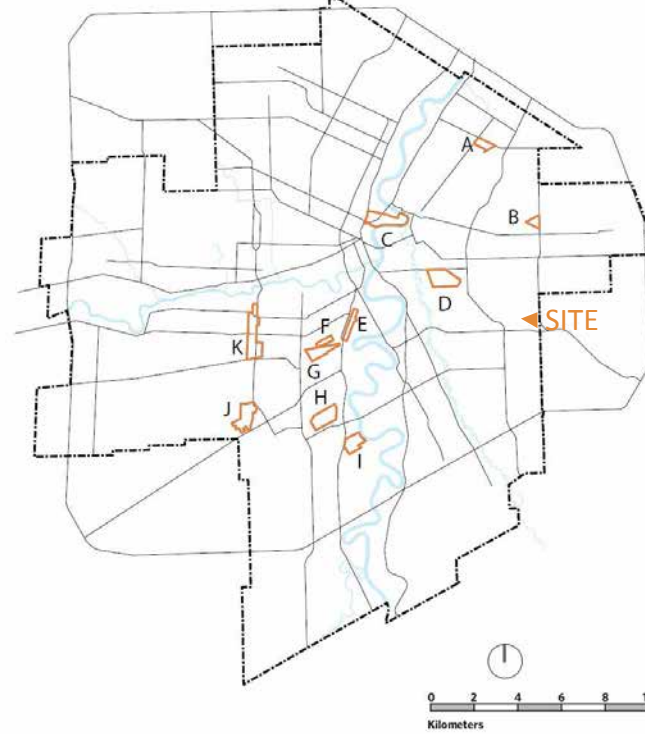


Figure 1.28 Site surrounding in Transcona



Figure 1.30 An illustration of the complete Park City Plaza on newspaper City of Winnipeg / supplied rendering in Transcona transformation by Martin Cash.2013. Winnipeg Free Press. retrieved from <http://www.winnipegfreepress.com/business/transcona-transformation-207330771.html> (accessed October 28, 2013)



Figure 1.29 Site condition



Figure 1.25 Illustration comparison of perceived density

2

CURB SPRAWL ON SITE



- 2.1 **Sprawl in Transcona**
 - *Regional Context: existing development*
 - *Regional Context: potential development*
- 2.2 **Curb Sprawl with Superblock**
 - *Planning Strategy: TOD and BRT plan*
 - *Design Index from Planning: Superblock Design Brief*

2.1 Sprawl in Transcona

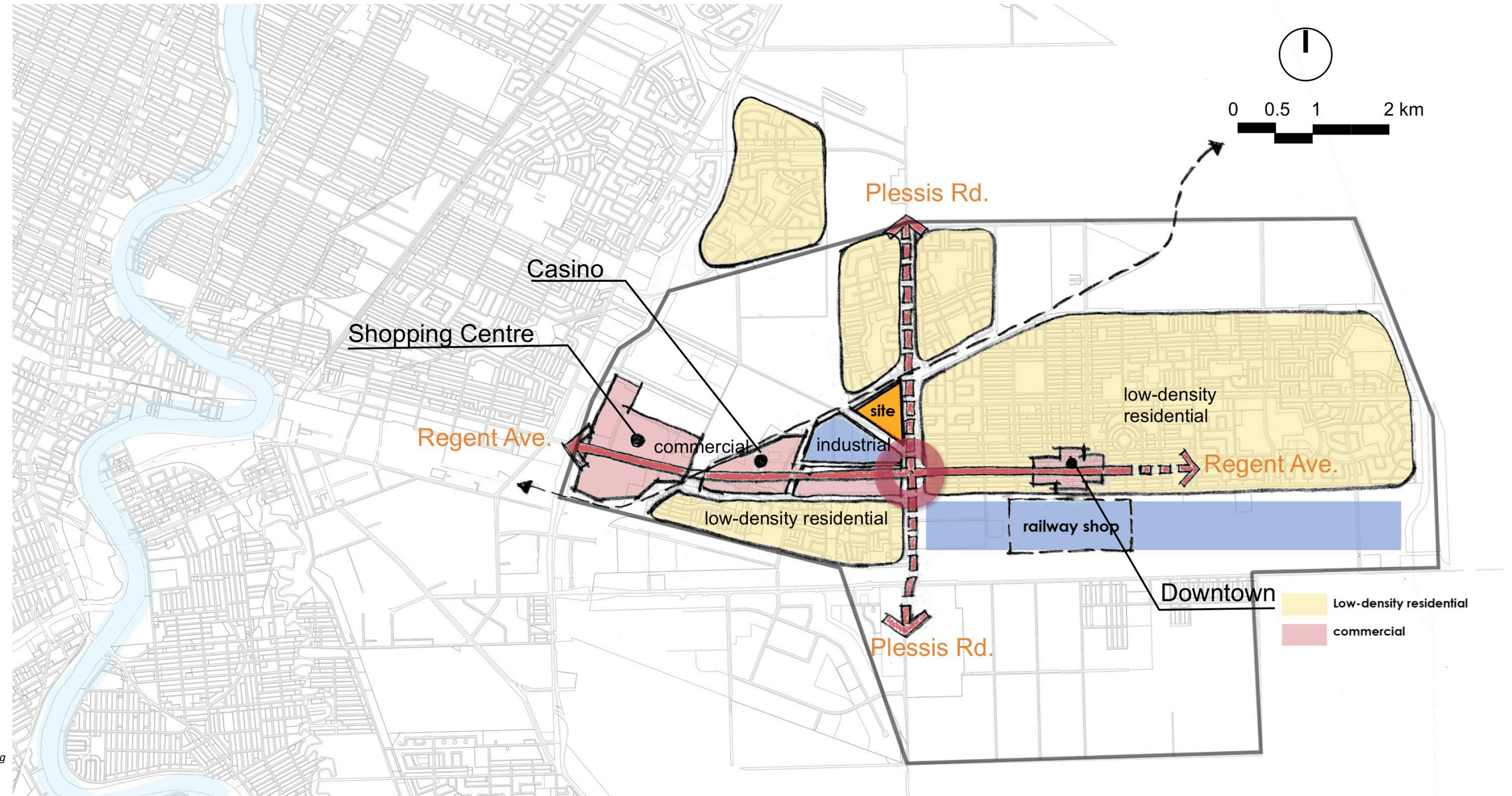
Regional Context: EXISTING DEVELOPMENT

The existing development has been dominated with single family with some commercial and industrial.

All the existing development are concentrate along these two axis. Regent and Plessis are two structural crossing axis for Transcona. Regent is a well developed urban axis with 3 existing nodes: Kildona shopping place, Casino and Transcona downtown, which continuously connected as a commercial strip. Plessis road is a developing urban axis. The site is along Plessis and closed to the intersection of two axis. So It is a good location to increase density for future.

The site was not only enclose by the residential but also industrial and small commercial and primitive land, which composed a dynamic surrounding could enhance the future mixed-use.

Figure 2.1 Existing development



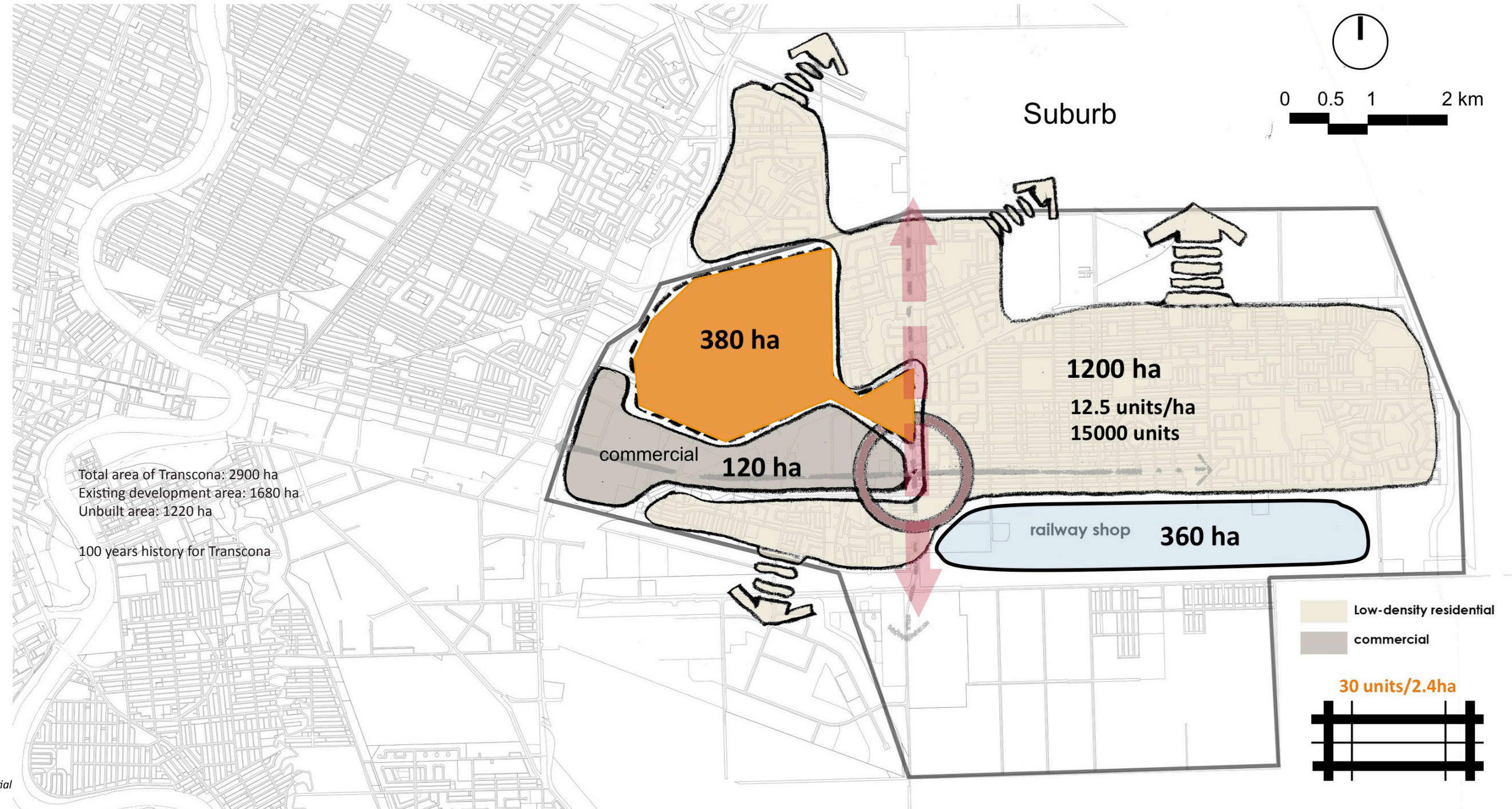
2.1 Sprawl in Transcona

Regional Context: POTENTIAL DEVELOPMENT

Transcona has only taken 100 years to build up over half a town with average density of 12.5 units/ha. In the built up area, there are over 75% single family residential development. The potential development area are surrounded by sprawl. According to this development pace, there will be only another 100 years development left to sprawl.

The selected site is located in the 380 ha orange colour potential high-density development zone (Figure 2.2), which is among the built up commercial and residential area. The trend of old development are expanding outside. To curb sprawl, need to develop the inside potential district more compact with high density. If we tripled the density in this area, it could provide as same as the entire existing housing units. Thus the sprawl will be effectively controlled. Potential development district is in community scale, which is over neighbourhood scale, over waking distance, so It has to give priority to transportation planning.

Figure 2.2 Potential development



2.2

Curb sprawl in Transcona

Planning Strategy: TOD AND BRT PLAN

City is proposing a BRT route through site and published Winnipeg TOD handbook for redevelopment project. The BRT route (Figure 2.3) will become a W-E corridor but it has not been finalized yet. This information provided a reference for planning the BRT route and setting the location and hierarchy of the station area. The density of the superblock model just fits the Urban neighbourhood zone in the Winnipeg TOD handbook (Figure 2.4), so the site was proofed as a possible location to be a station area of this type with realistic significance. It provided a platform for the further design of the superblock.

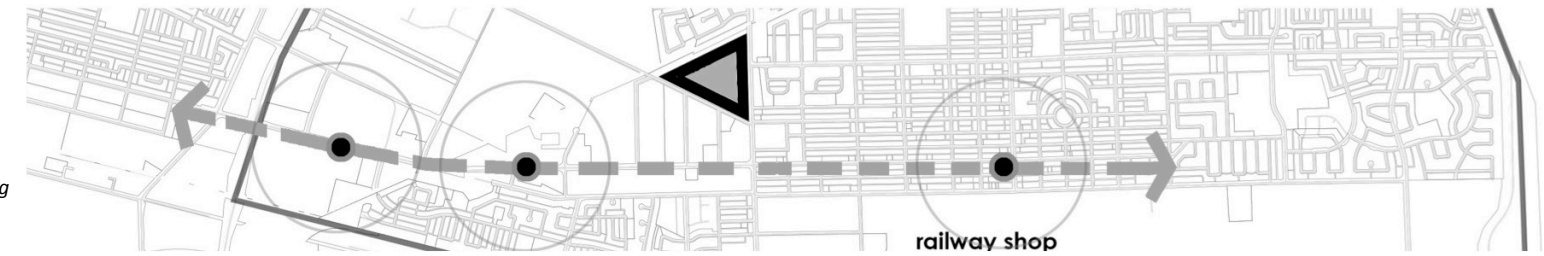


Figure 2.3 Exiting proposed BRT Route

TOD Zones:						
TOD TYPE	Urban Centre	Urban Neighbourhood	Town Centre	Neighbourhood Medium Density	Neighbourhood Low Density	High Frequency Transit Corridor
Land Use Mix	Office Centre Urban Entertainment Multiple Family Retail	Residential Retail Class B Commercial Superblock 150units/ha	Office Centre Urban Entertainment Multiple Family Retail	Residential Neighbourhood Retail Local Office	Residential Neighbourhood Retail	Office Centre Urban Entertainment Multiple Family Retail
Net Housing Density*	124-371 units per hectare (50-150 units per acre)	99-247 units per hectare (40-100 units per acre)	86-247 units per hectare (35-100 units per acre)	49-124 units per hectare (20-50 units per acre)	25-49 units per hectare (10-20 units per acre)	62-148 units per hectare (25-60 units per acre)
Regional Connectivity	High, Hub of regional system	Medium access to downtown, Sub regional hub	High access to downtown, Sub regional hub	Medium access to suburban centre, Access to downtown	Low	High access to downtown, Sub regional hub
Frequencies	5 - 15 minutes	5 - 15 minutes	5 - 15 minutes	15 - 30 minutes	20 - 30 minutes	5 - 15 minutes

Figure 2.4 TOD zones for City of Winnipeg, City of Winnipeg. (2001). Winnipeg Transit-Oriented Development Handbook. (PP. 7). Retrieved from <http://www.winnipeg.ca/ppd/tod/pdf/Handbook.pdf> (accessed October 30, 2013)

2.1

Curb sprawl in Transcona

Design Index from Planning: SUPERBLOCK DESIGN BRIEF

Based on TOD guide platform, The design task could be abstracted to create 2400 units block in 16ha site with a rapid transit station somewhere (Figure2.5).

Through some calculation, such as 120spm per unit, 0.75 parking stall per unit, 0.25 visitor parking per unit, we got a specific design brief (Figure2.6), which came from the planning

Figure 2.6 Design brief index

Site area	16 ha + BRT station
Density	housing: > 150 units/ha Population > 300P/ha FAR>2.0
Building index	Housing > 2400 units > 288000 sqm Parking >2500 stalls > 75000 sqm Library > 3000 sqm Recreation centre > 5000 sqm Commercial > 10000 sqm
	Total building area>306000 sqm, (excl. parking75000)

Figure 2.5 Abstract design task



3

MAKE A SUPERBLOCK ON SITE



- 3.1 Context**
 - Regional Context: habitat metrics
 - Regional Context: TOD pattern
 - Site Context: surroundings and potential BRT station
 - Site Visiting: images of the site
- 3.2 Site Analysis**
 - Dominate problem: edge segregation
 - Conceptual Solution: permeation and introversion
- 3.3 Design Exploration**
 - Concepts: three directions
 - Living Unit: human scale and spatial diversity
 - Design Progress: from concept to form
- 3.4 Design Illustration**
 - Description: master plan and physical model
 - Diagrams: overall plan structure, land use, public transit, driving and parking, pedestrian, storm water
- 3.5 Design Proposal**
 - Overall Design Characteristics
 - Open Space Net work
 - Detailed design: nature park and forest living, TOD node, cultural park, court yard landscape, central park

3.1 Context

Regional Context: HABITAT METRICS

The triangle site is aligning with the CNR railway from west to east which could be conceived as an active ecological corridor connecting the Red River and flood way, from hydrology to hydraulic. On the other hand, there are also many existing large parcels of nature habitat along this corridor, which reinforced this ecological metrics. Therefore, to nest the future superblock site plan into this advantaged natural pattern would enhance the ecological sustainability in regional scale context (Figure 3.1).



Figure 3.1 Habitat metrics

3.1 Context

Regional Context: TOD PATTERN

The proposed BRT route (Figure 3.2) with station hierarchy for the potential development. The route will connect three existing hubs and four potential nodes as stations with a 400m radius catchment.

The selected site will be designed as an urban neighbourhood (100-250 units/ha), the other part of the potential development area will be considered as the medium density neighbourhood (50-125 units/ha).

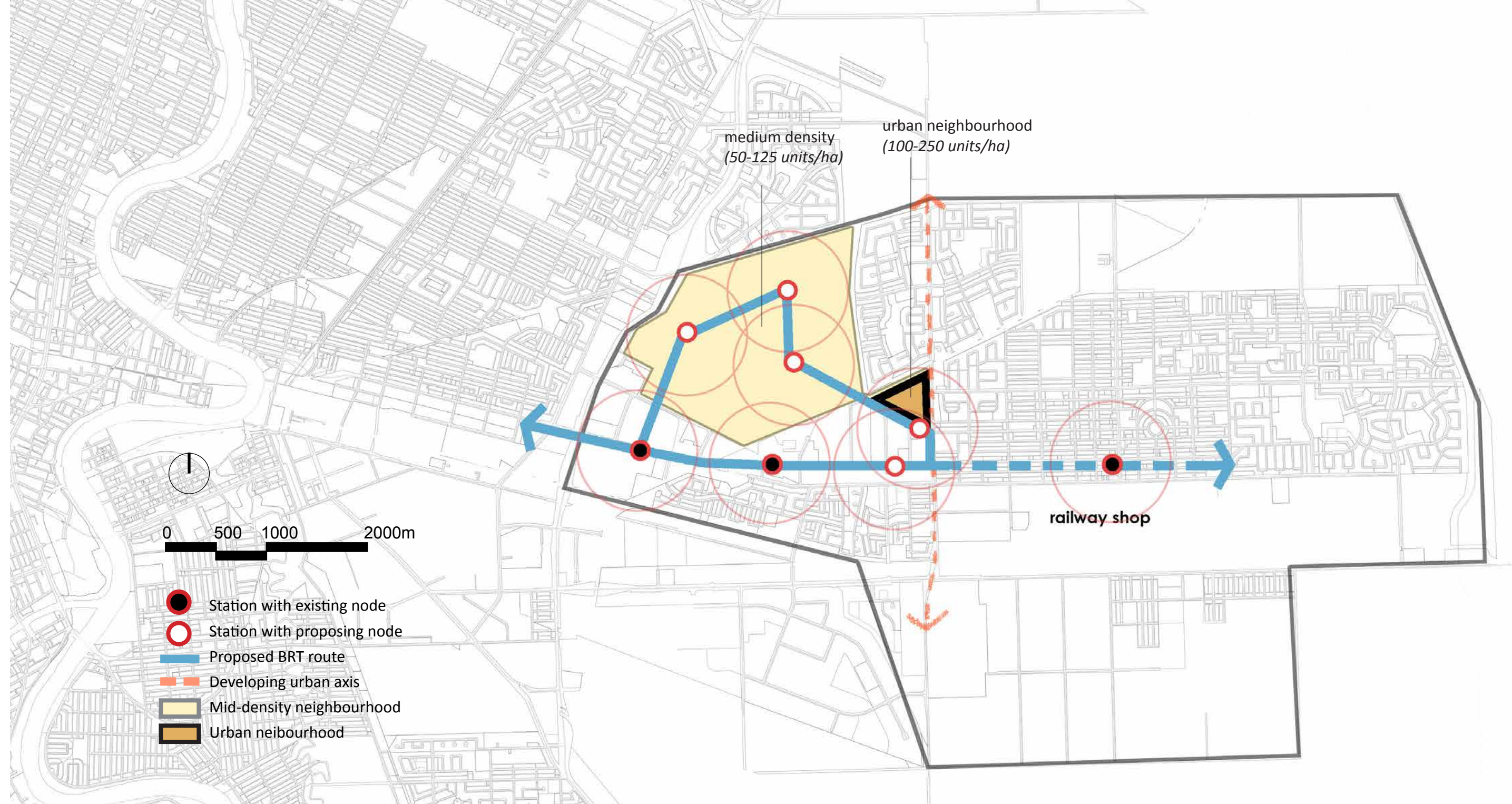


Figure 3.2 TOD pattern

3.1 Context

Site Context: SURROUNDINGS AND POTENTIAL BRT STATION

Three sides of this triangle site are facing two existing low-density neighbourhoods on the east and northwest and a industrial district (Figure 3.3).

There are two rectangle green space connected to the CNR Rail line corridor. One is the tall grass prairie preserve park in the middle of the industrial area, the other is a heritage park along the west side of Plessis Rd. So these two green patches linking with the potential active nature habitat corridor could frame basic green space net work around the site.

Some existing street commercials and a school deviation are around the south corner of the site, which form an advantage environments for the BRT station with 400m catchment which covered most part of the site and leaved rooms along railway corridor to be enhanced.

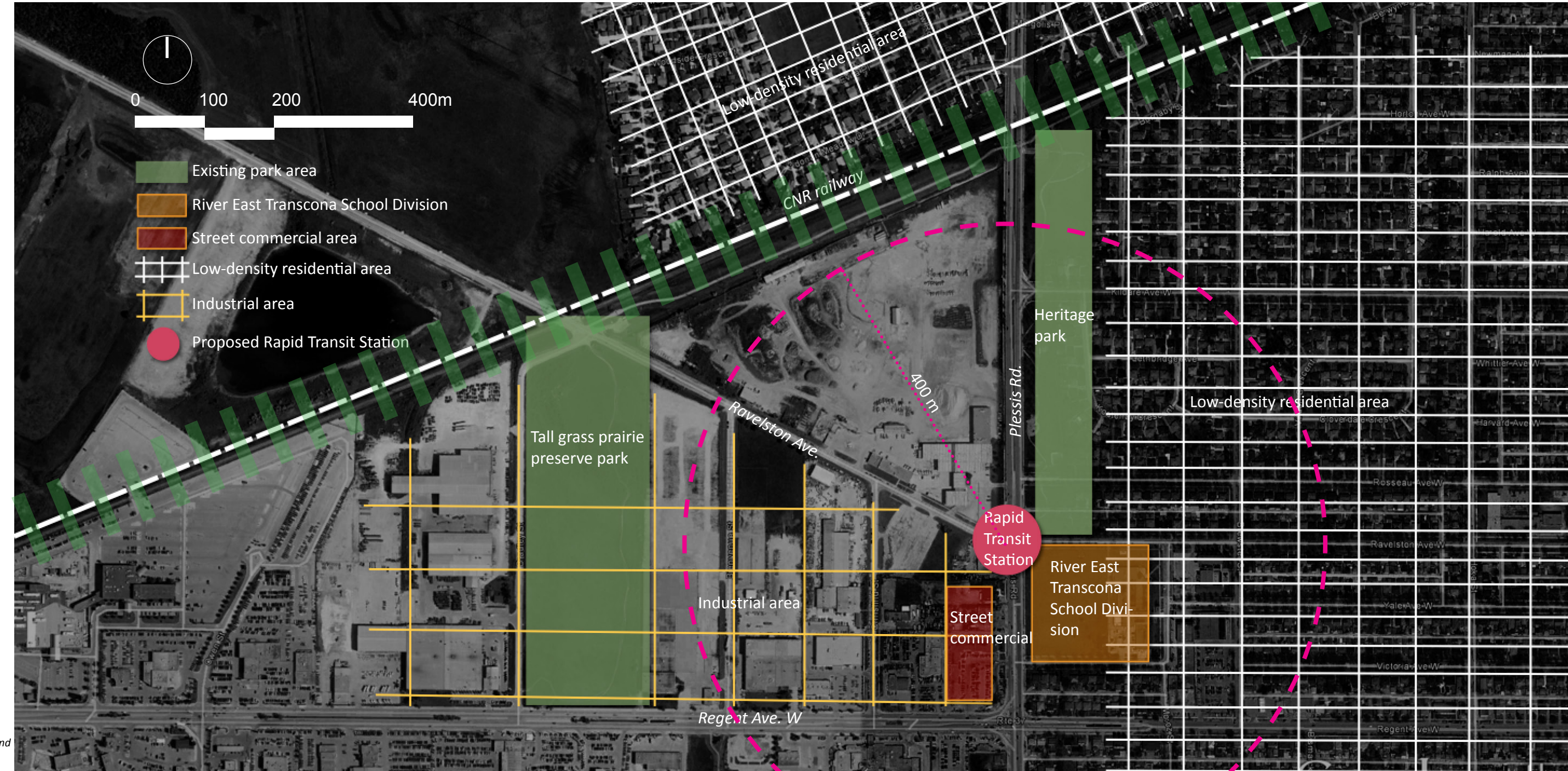


Figure 3.3 Site surroundings and proposed rapid transit station

3.1 Context

Site Visiting: IMAGES OF THE SITE

The site itself is pretty much a vacant field which were fenced already for construction. It used to be a city yard. Visually, there is no connection with single family housing surround. The surrounding condition looks all filter by edges, so the other way round, the future high-density also will be filter a little bit, not to make a sharply different views. The pictures surround in Figure3.4 showed different characteristics of different areas. Tall grass prairie preserve between industrial blocks at the far end and a number of groups of linear trees standing along the railway corridor. The heritage park is along plessis, almost stretched from Regent to the rail line. There are half part of existing forests and half part of grass field with locomotive, "witch nut" and other heritage stuffs shown in the park. It located as a community park between existing low-density housing and future high- density superblock, which is like a shared park but also a filter between dramatic density variations. A school division with an open view and small stagnant commercials are around the south end of the site, which leaved rooms future station node here.



Figure 3.4 Images of the site

3.2

Site Analysis

Dominate problem:
SEGREGATED BY EDGE CORRIDOR

The characteristics of three edges shown in Figure 3.5, Urban Corridor in red, Transportation Corridor in blue and CNR Ecological Corridor in green, clearly defined this triangle neighbourhood. These edges are all active corridors along the site boundary, which built the connections for the site with the urban context, but, on the other hand, they may segregate the site from inside to outside as well, which would be the dominate problems of this vacant site for future superblock.

So to how to permeabilize the potential segregation became the current question, which is also one of the problems summarized from the Chinese superblock precedents.

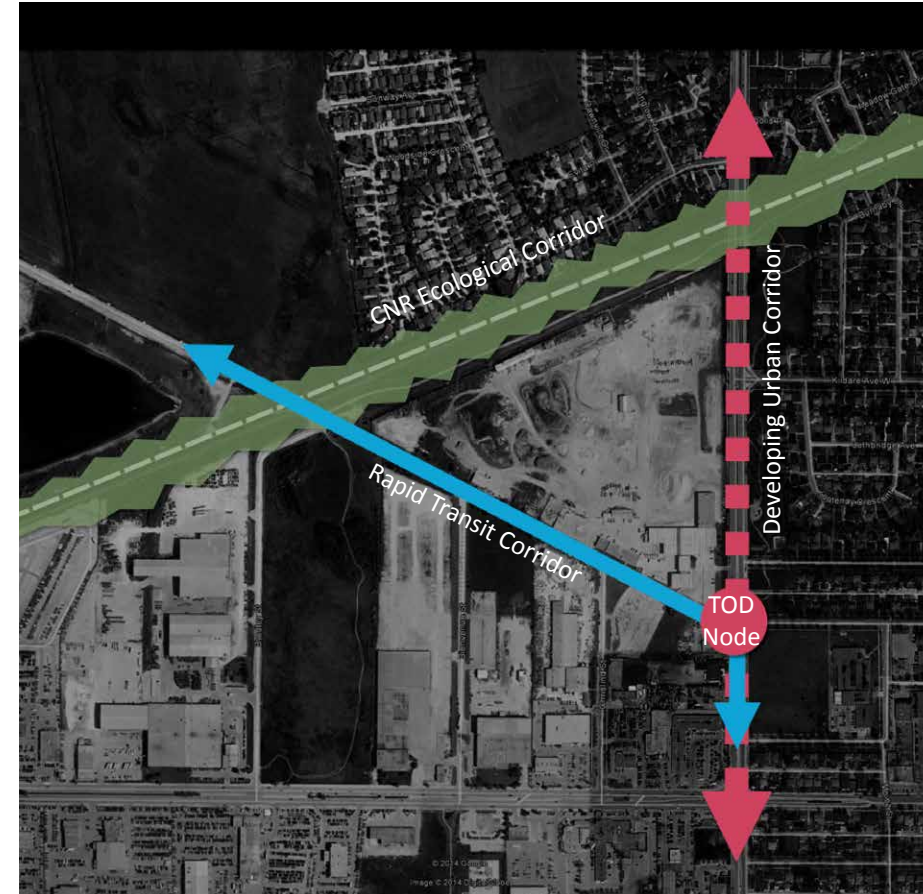


Figure 3.5 Edge characteristics of the site

Conceptual solution
PERMEABILIZE AND INTROVERSIVE

Figure 3.6 simplified a potential solution concept. On one hand, to permeabilize the edge segregations, on the other hand, to make the superblock more introversive for social connectivity, which is also another call from the problematic superblock study.

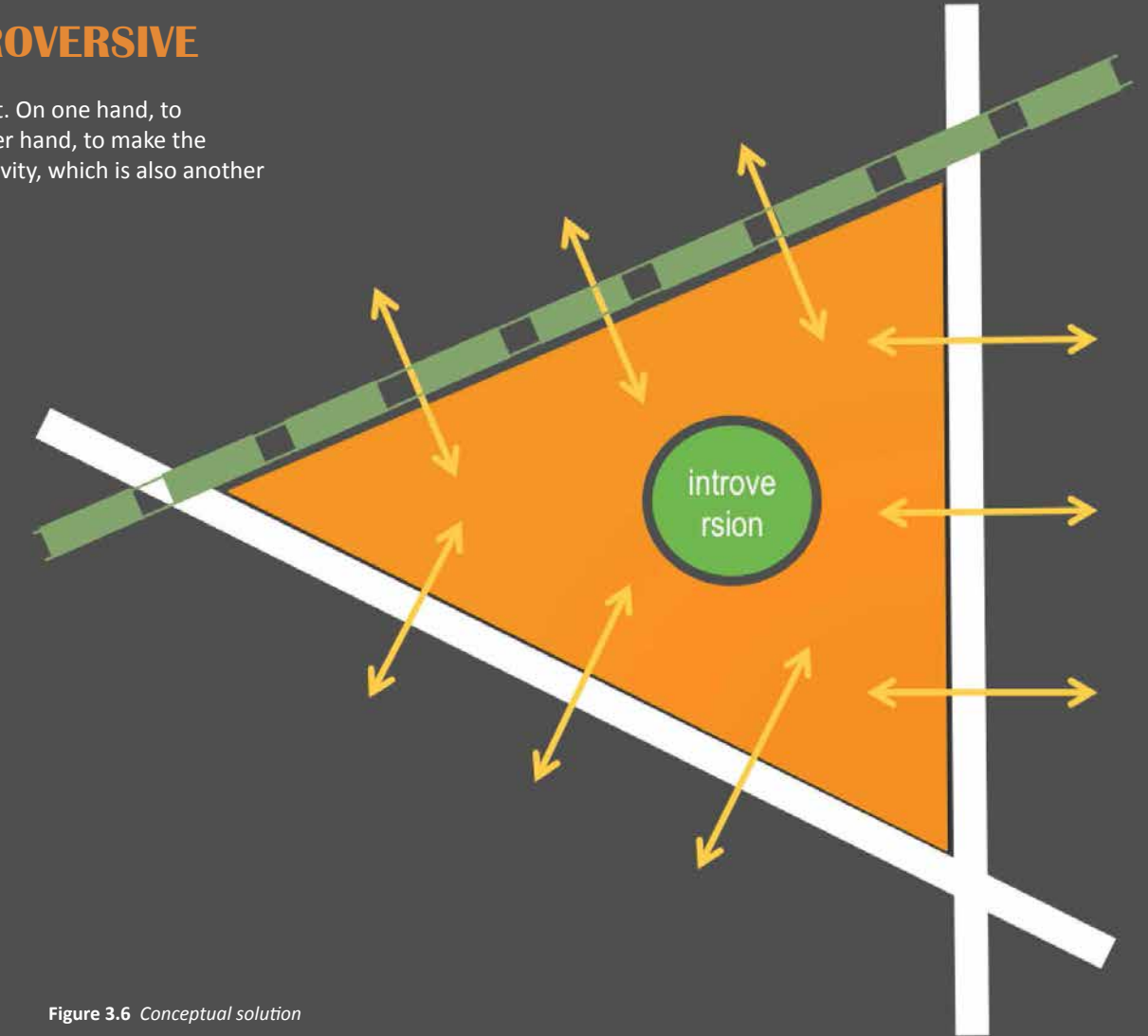


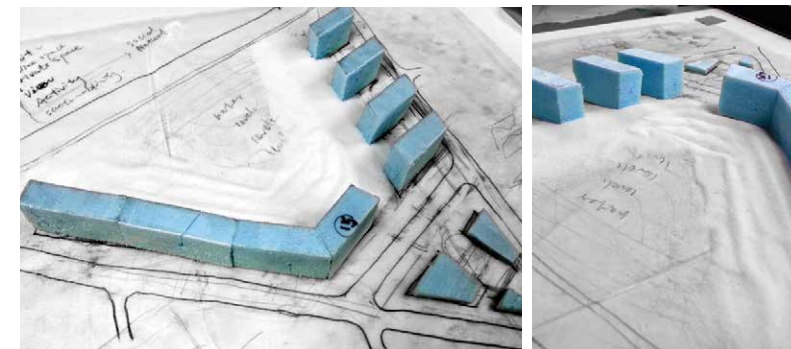
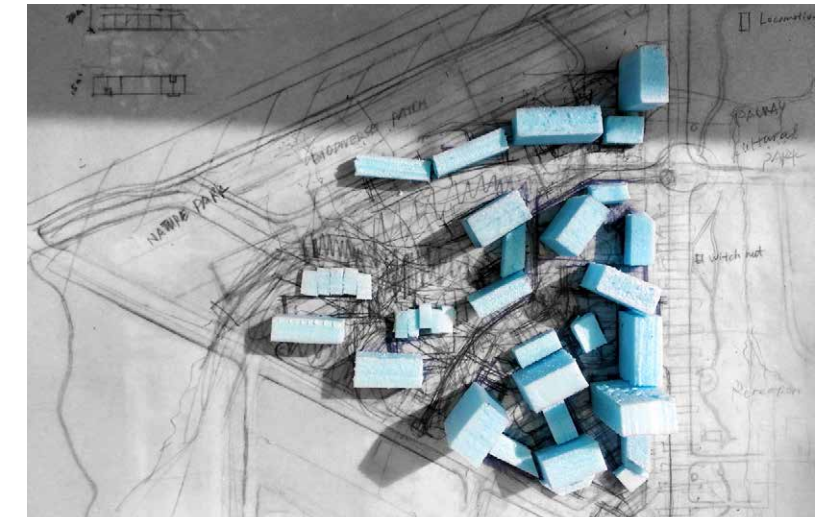
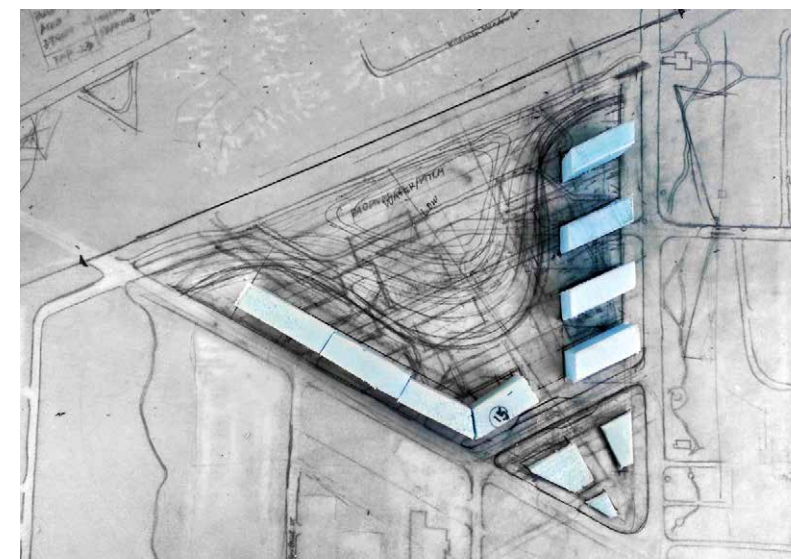
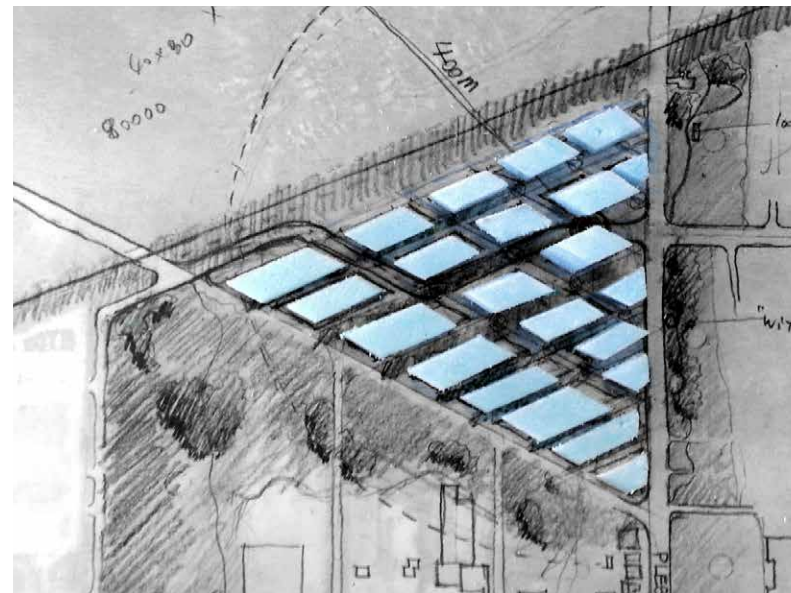
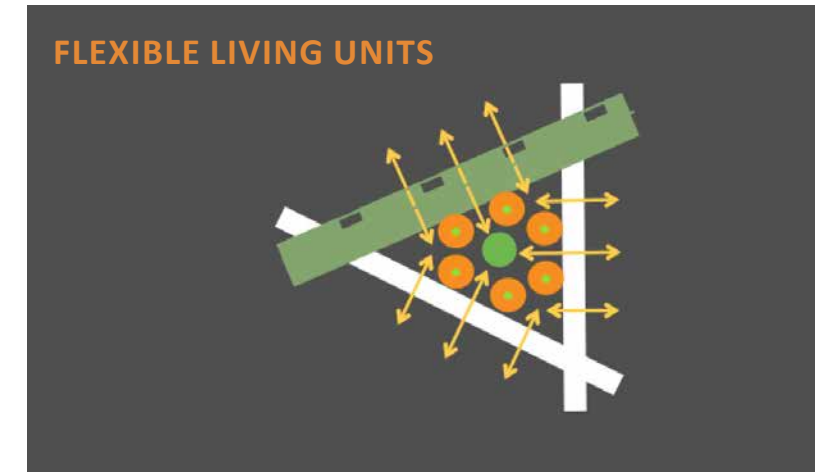
Figure 3.6 Conceptual solution

3.3 Design Exploration

Concepts: THREE DIRECTIONS

Figure 3.7 shows three extreme conceptual ideas I started with. The first one is extreme permeation, which based on environmental parameters, such as accessibility, daylighting, density distribution, to made all possible connections directly crossing the site to form the building mass into smaller pieces. It is somehow a parametric design thinking, but there is too much repetitive, monotonous space with a rigid fabrics. The smaller building pieces become single living units, solo social units, open to the city, while the introversion is missing in this direction. The second direction is to maximum the introversive open space for ecological connection. A giant linear building will be built along the other two sides. The whole neighbourhood will be simply divided into two parts, either private or public and the neighbourhood be tackled with a giant architecture design. The vision is splendid but not in human scale, with spatial diversity. It is like replacing a urban fabrics parcel into an enlarged single building site. The third one, I called it flexible living unit, it break down the building mass into couple of living units shown as orange circles, which were distributed into the site with a introversive open space in the centre and flexible rooms among those living units. It is still a neighbourhood but break down the living environment more human scale and leave flexible, diverse open space for permeation. Finally, I chose the last direction for the further design.

Figure 3.7 Three conceptual design directions



3.3 Design Exploration

Living Unit: HUMAN SCALE AND SPATIAL DIVERSITY

As the density of 2400 units on 16 ha site has been there, it requires some buildings to be bigger or taller, but the towers in park is not what the scenario we expect for. We are looking for a spatial form which is more human scale from people's perception but still can hold the amount of the density.

So I built a living unit (Figure 3.8) as a group of buildings in a courtyard-like structure, which basically has the podium at the bottom and tower on top, but the podium could be designed more flexible with a free plan open yard. Depending on building height and the daylight distance of towers in between, the yard-like living unit here arrange from 500-700 units for each, which is also a psychological safe, compact effective scale for social connectivity, which was also missing in some design practice before. The living units composition also provided a much more flexible open space for diverse permeabilization going through and nest neighbourhood into urban context.

The conceptual sketch plan (Figure 3.9) on the right showed how the living units were nested in to the ecological finger pattern and TOD accessibility pattern from the regional context. So that became a framework to develop the master plan.

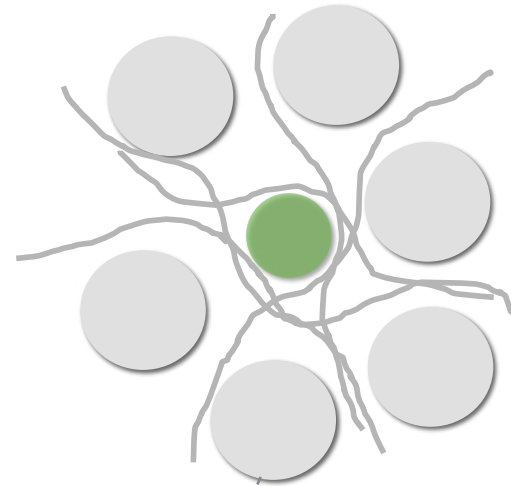


Figure 3.8 Illustration of living unit

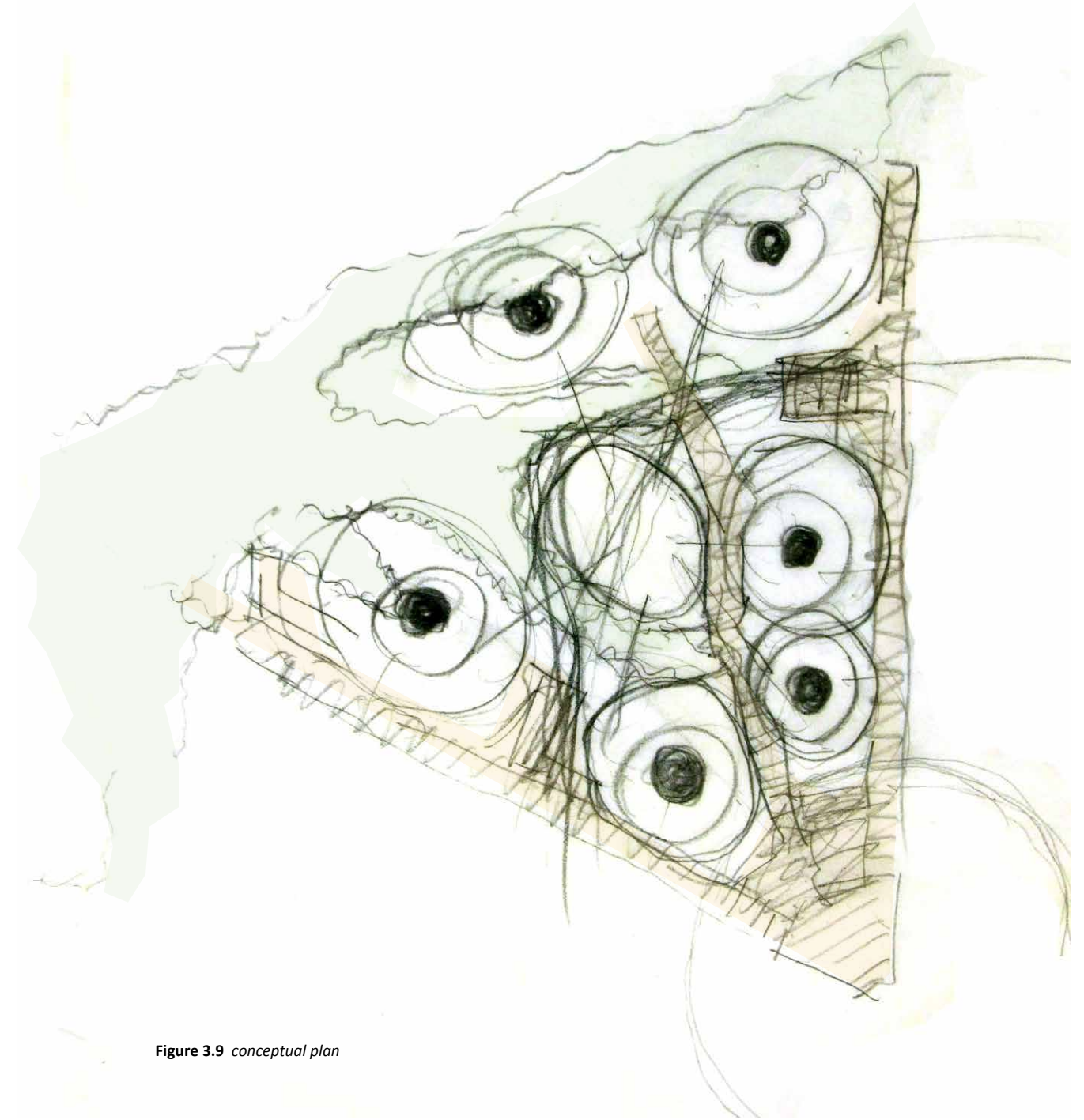
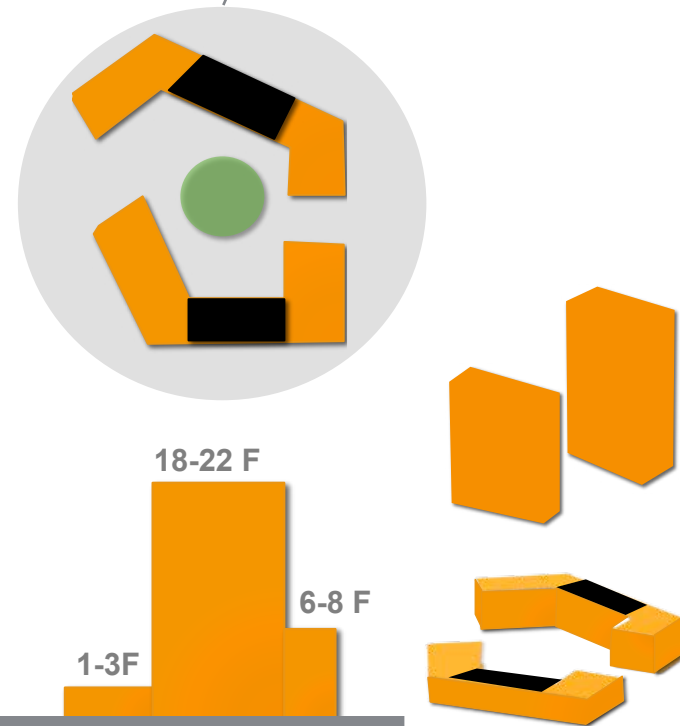


Figure 3.9 conceptual plan

3.3

Design Exploration

Design Process:
FROM CONCEPT TO FORM

Figure 3.10 and Figure 3.11 showed the design process from concept to form. It reflected an integral urban design process, every design elements were coming up together. It avoided the design process separated by disciplines. It is can be read how each living units were born unique and integrated with the environmental design and how these dense building mass were manipulated with the open space network.

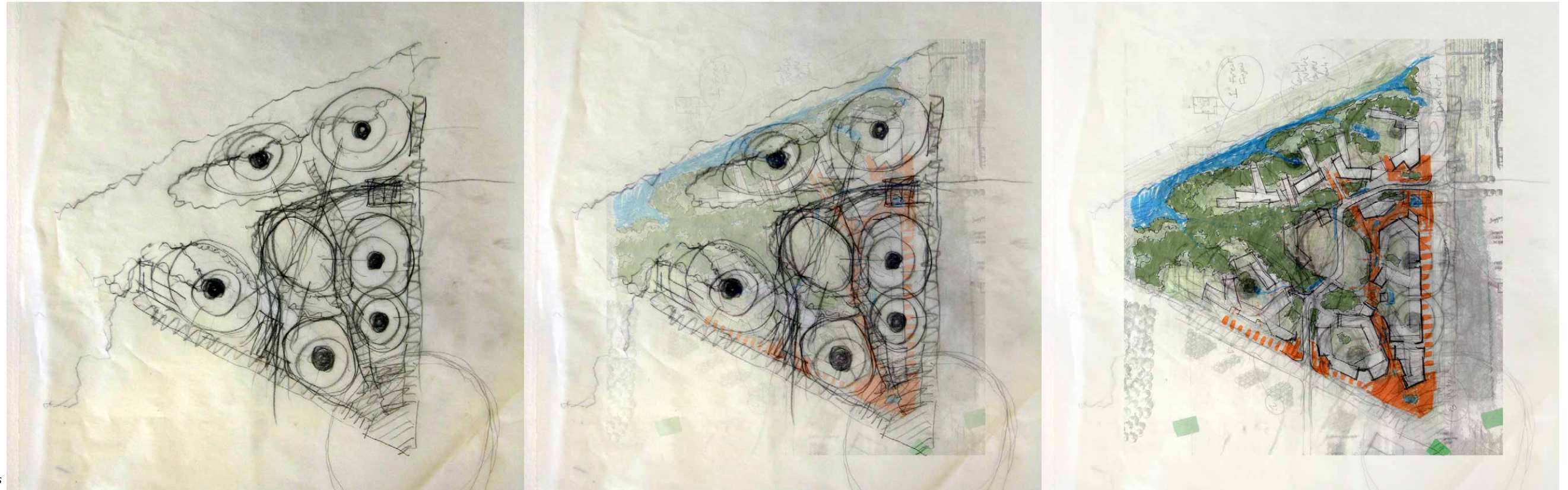


Figure 3.10 Process sketches

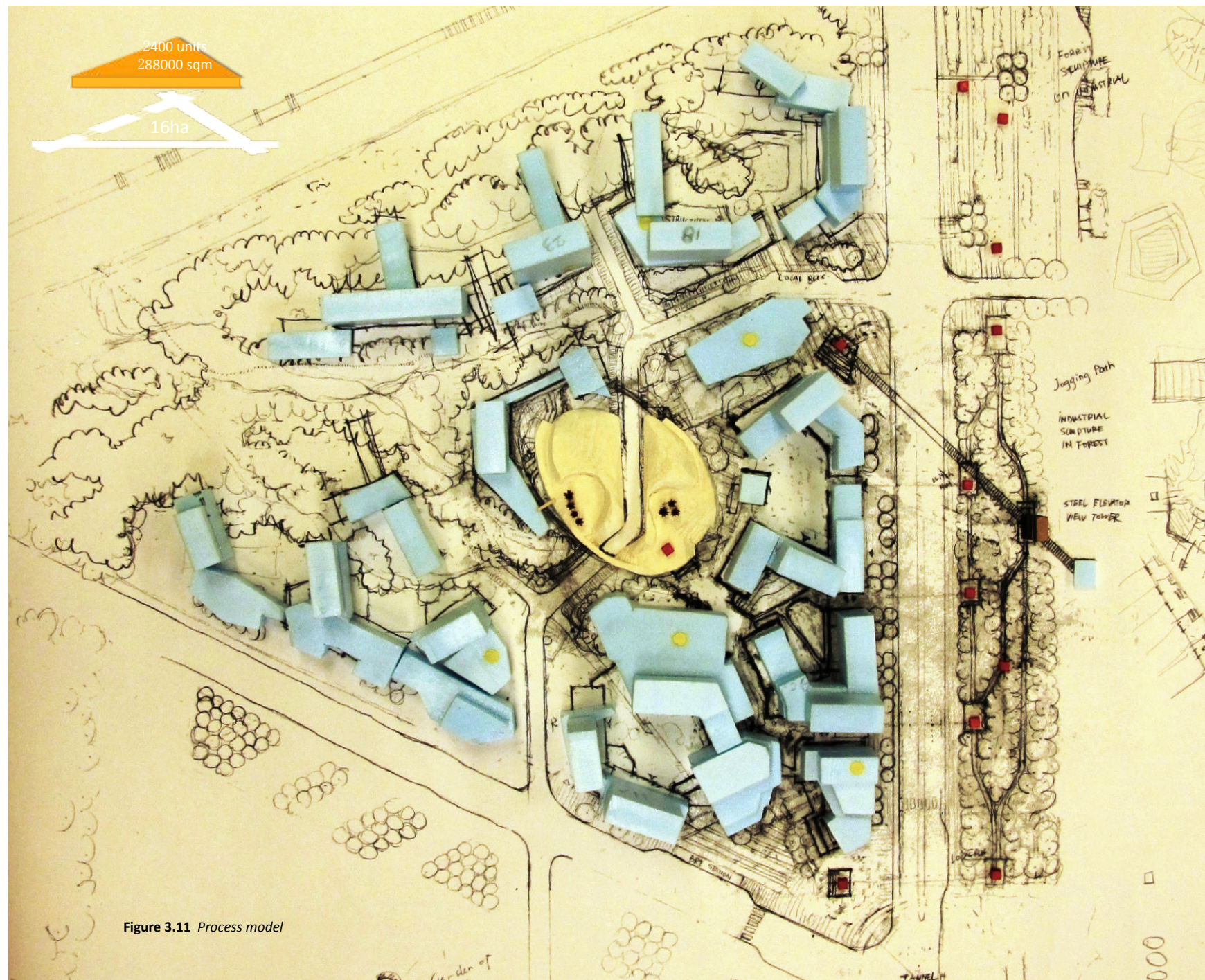
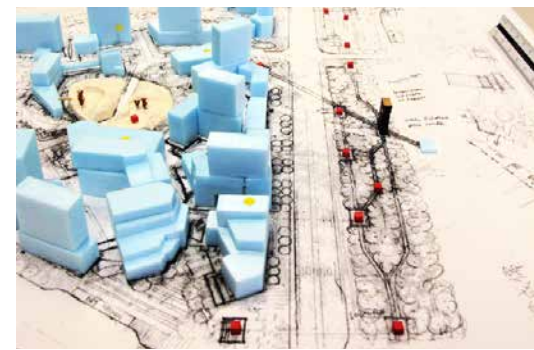


Figure 3.11 Process model



3.4

Design Illustration

Illustration

Description:
MASTER PLAN & PHYSICAL MODEL

The overall structure of the plan was driven by two pattern forces, which both came from the previous planning decisions in regional context.

On the one hand, the nature pattern is the green finger extensions from the potential natural habitat in the northwest. On the other hand, TOD pattern is the access radiation from the rapid transit station in the southeast. The two patterns encountered together at the central open space and the living units were nested into this structure to shape a complete superblock neighbourhood.

The plan was basically divided into two districts. One is more urban style in the southeast of the Central Park. While another one is more natural style. Functionally, The TOD centralized urban style district includes more urban functions, such as the new library, new recreation centre and street commercials. The natural district was highly integrated with finger forest patterns with stream waters, which formed a wild landscape residential environment. The water system here is not only provided a recreational open space net work, also solved the storm water treatment, which



Figure 3.12 Master plan

3.4 Design Illustration

reduced the burden on the urban sewer system. Based on this structure, the master plan was somehow finessing the integration of blue, green and gray network.

To ease the boundary segregation of the superblock, there are different strategies to follow by each edge identity. The railway was stepped back aside for enhancing the ecological corridor and connecting with the exiting tall grass prairie reserved area. It is permeablizing the natural pattern into the superblock. For the edge of Plessis Rd., both sides of street were considered together with visual and access interactions, which brought the access permeation across the urban developing corridor, from active frontage to the cultural park. The last side is the BRT corridor, Ravelston Ave., which seemed like the hardest segregation. But the existing industrial district at the south can be developed to potential employment area, which will provide the job opportunities for the superblock residents. It is also permeation through economically social connectivity for physical segregation.

The inside of superblock is design as six parts, Natural Park, Forest Living, TOD Node, Cultural Park, Courtyards and Central Park, which will be presented later detailed design part.

Figure 3.13 Final model



3.4 Design Illustration

**Diagrams:
OVERALL PLAN STRUCTURE**

- Finger forest pattern
- TOD access pattern
- Central introversion open space
- Living units

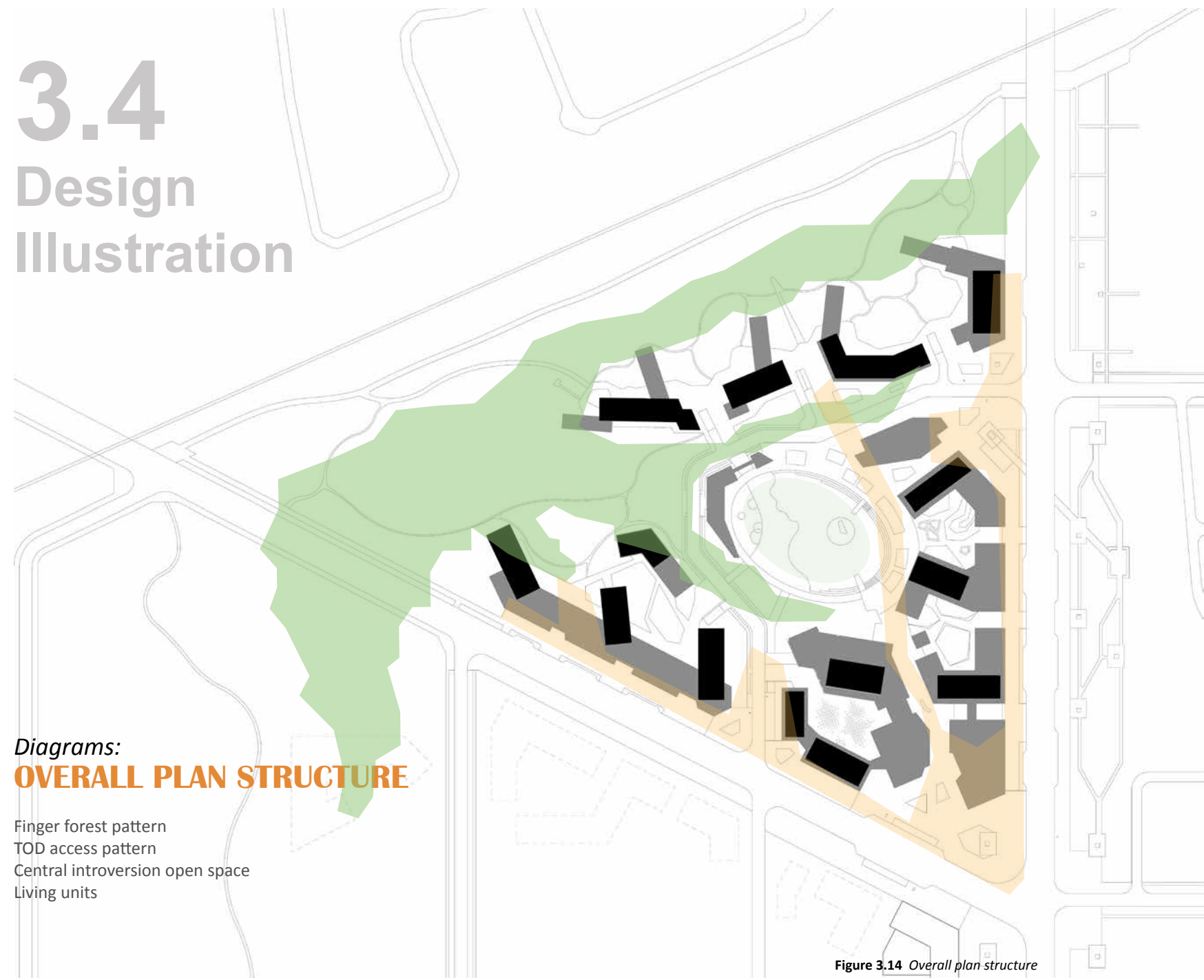
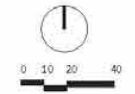


Figure 3.14 Overall plan structure



LAND USE

- Community public facility
- Neighbourhood public facility
- Residential
- Commercial
- Parkade

**Diagrams:
LAND USE**

- Mixed-use
- TOD node
- Active frontage
- Social axis

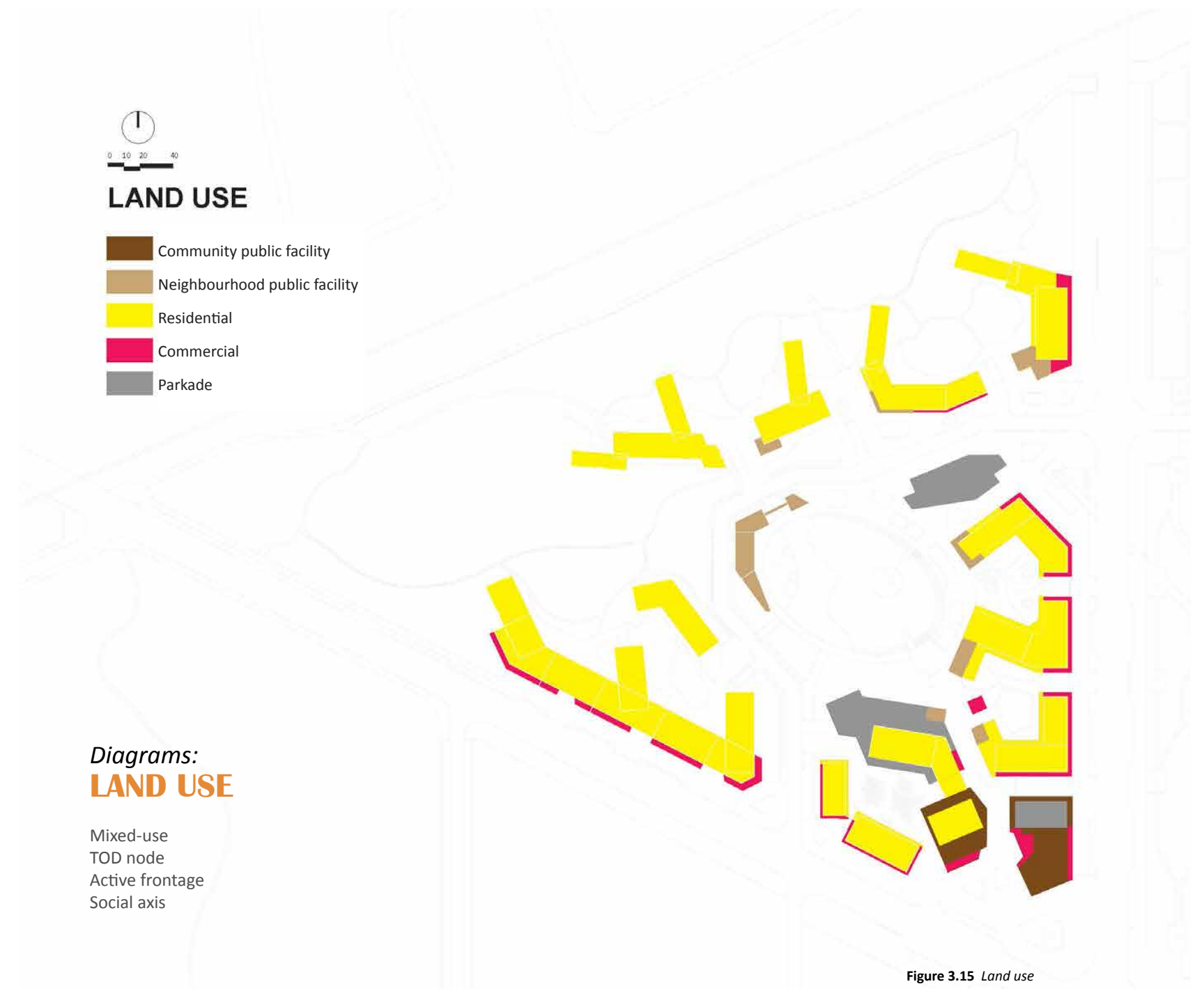


Figure 3.15 Land use

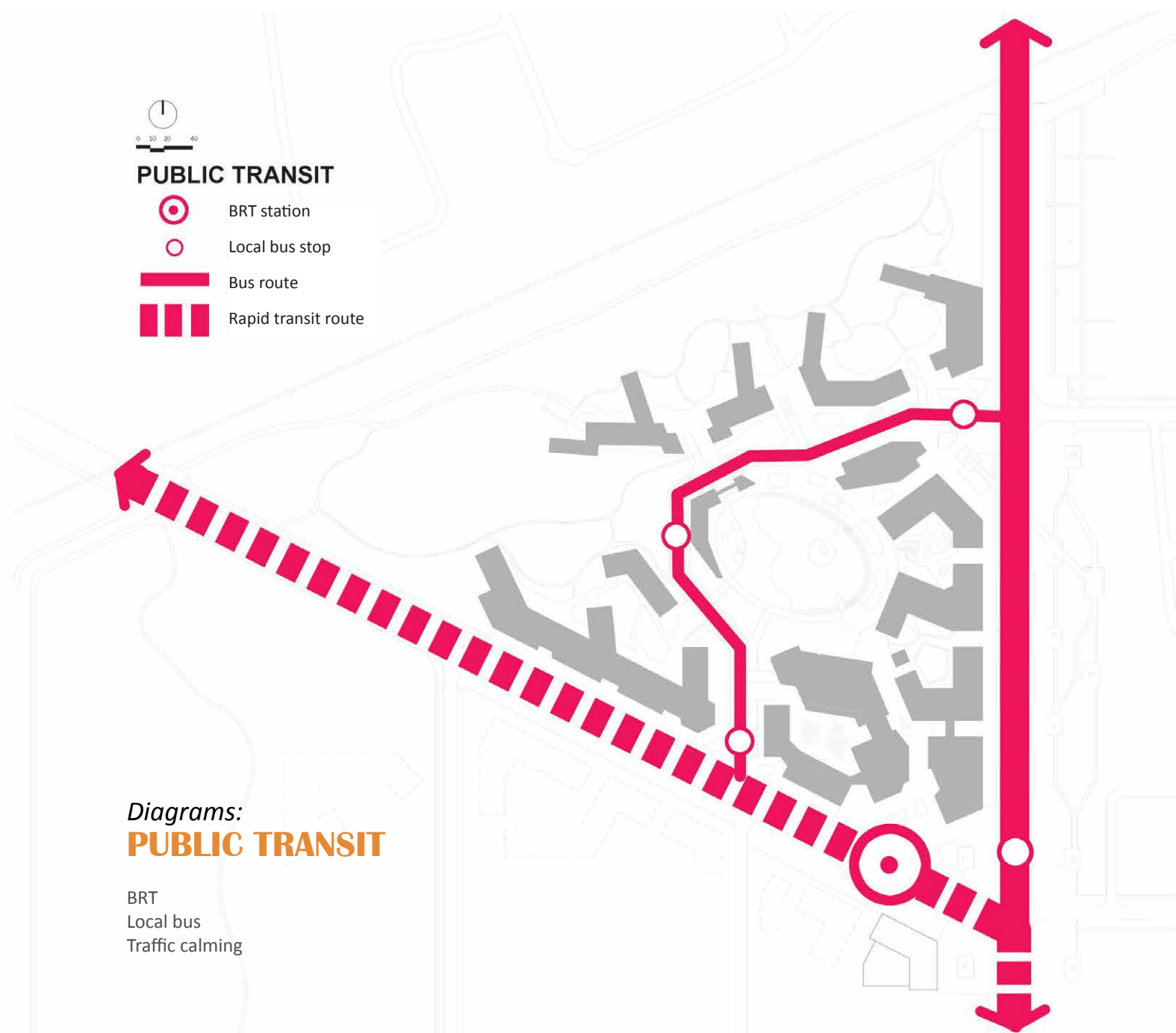


Figure 3.16 Public transit

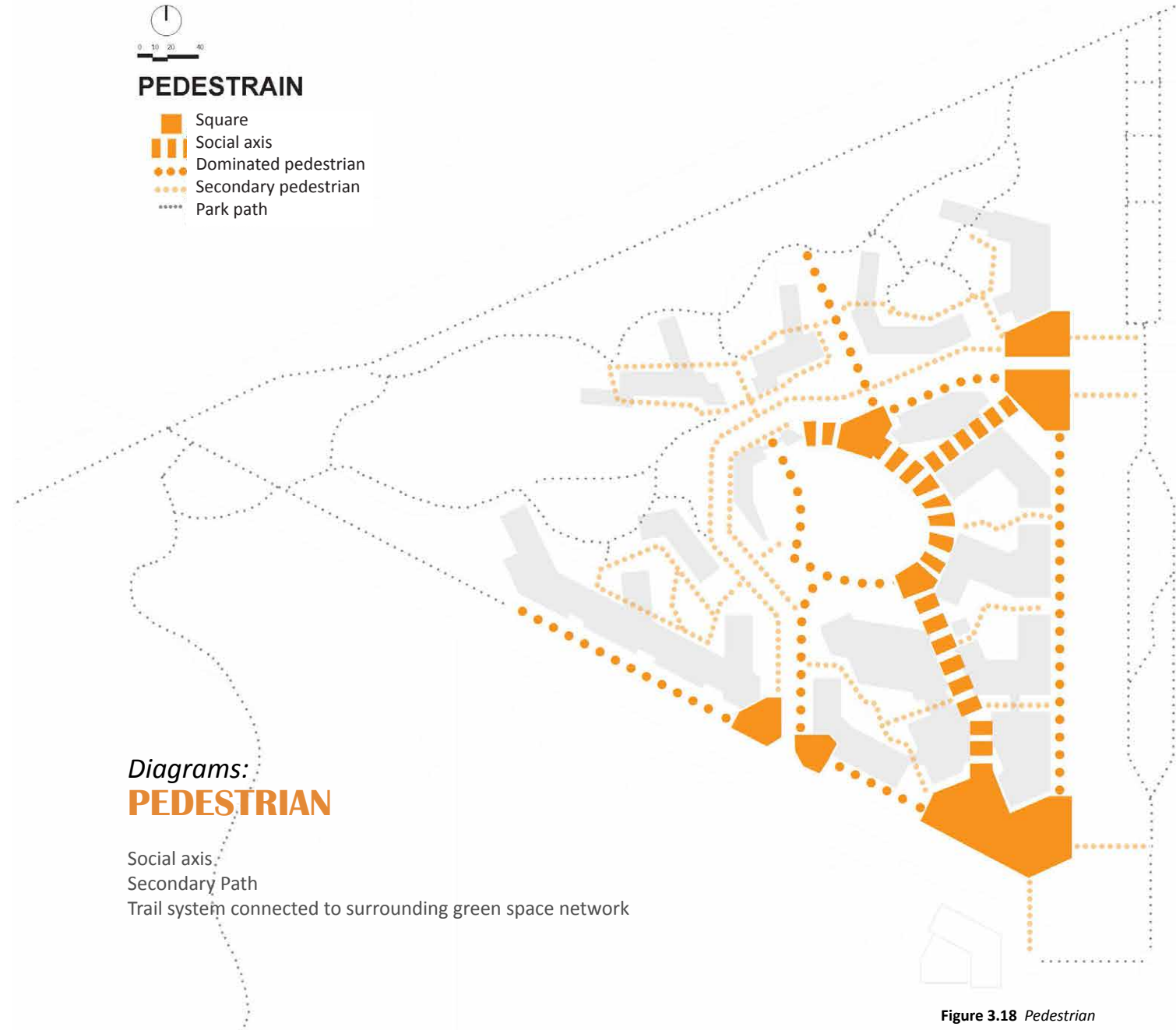


Figure 3.17 Driving and Parking



PEDESTRAIN

- Square
- Social axis
- Dominated pedestrian
- Secondary pedestrian
- Park path



Diagrams: PEDESTRIAN

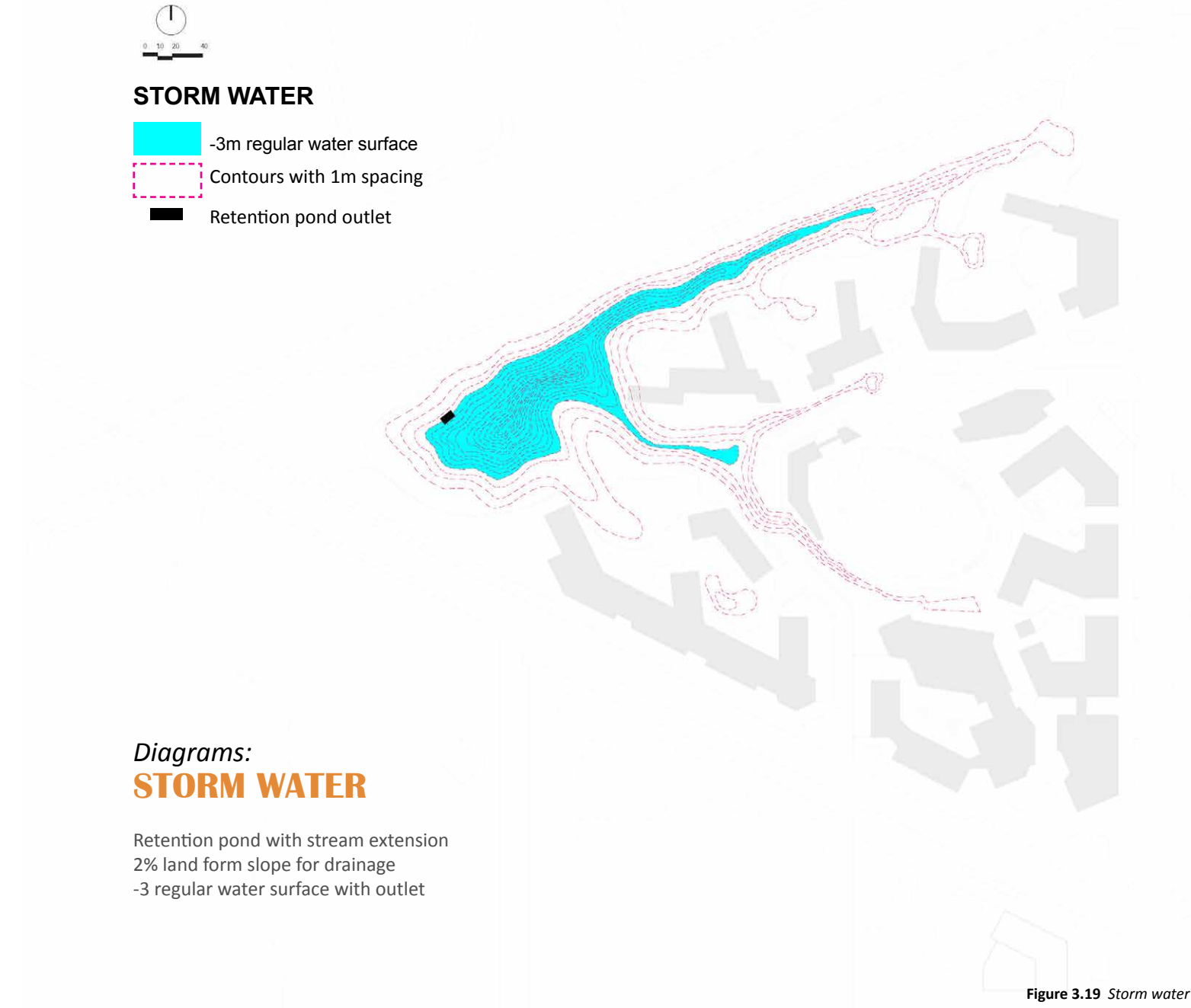
Social axis
Secondary Path
Trail system connected to surrounding green space network

Figure 3.18 Pedestrian



STORM WATER

- 3m regular water surface
- Contours with 1m spacing
- Retention pond outlet



Diagrams: STORM WATER

Retention pond with stream extension
2% land form slope for drainage
-3 regular water surface with outlet

Figure 3.19 Storm water

3.5

Design Proposal

OVERALL DESIGN CHARACTERISTICS

- Enhanced ecological connection between superblock and urban context
- Permeation for the boundary segregation through each edge identity
- Created diverse human-scale living units and open space network to foster social connectivity for residents
- Aspiring landscape design from local perceptions to create a clear sense of place
- Integrated architecture with landscape design together to create a compact and comfortable living environment

Figure 3.20 Overall perspective of model

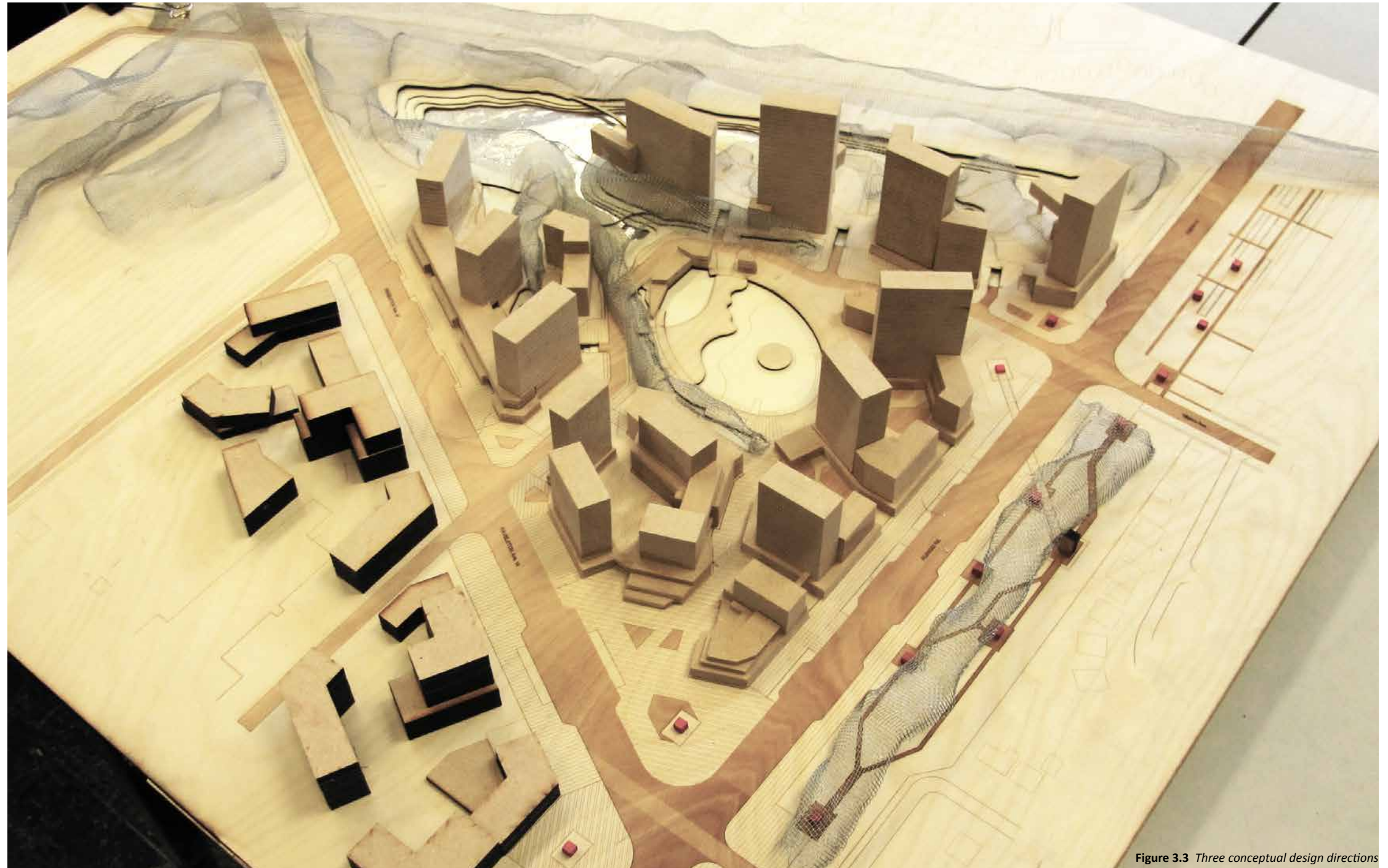


Figure 3.3 Three conceptual design directions

3.5

Design Proposal

OPEN SPACE NETWORK

A diverse and cohesive open space was created by both active accessibility and visual connection from Central Park through courtyard to the railway cultural park at the other side of superblock.



Figure 3.21 Open space network

3.5

Design Proposal

Detailed design: **NATURE PARK AND FOREST LIVING**

Nature park with finger patterns is designed as an extension part of the regional nature habitat metrics, which enhances ecological connections to the superblock. Besides bringing the finger forests into the superblock, a retention pond is set in the natural park with two streams as well, which not only can ease the pressure from city's drainage system but create a natural landscape environment for enriching residents' outdoor activities.

Forest Living are the living units adjacent to the Nature Park. They are highly integrated with the finger forest. The residential buildings are part-elevated for keeping the flow and continuity of forest patterns. The elevated building structure provides rooms floating on canopies or embraced by the lush canopies, which creates a sense of intimate forest living for the residents.

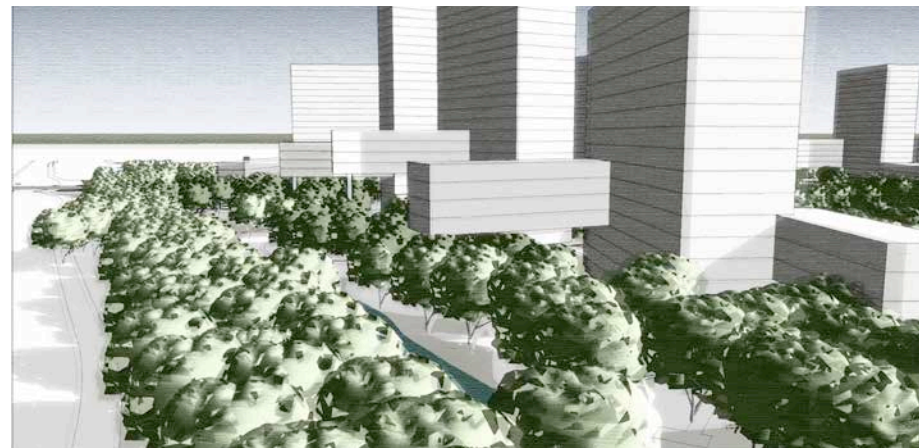
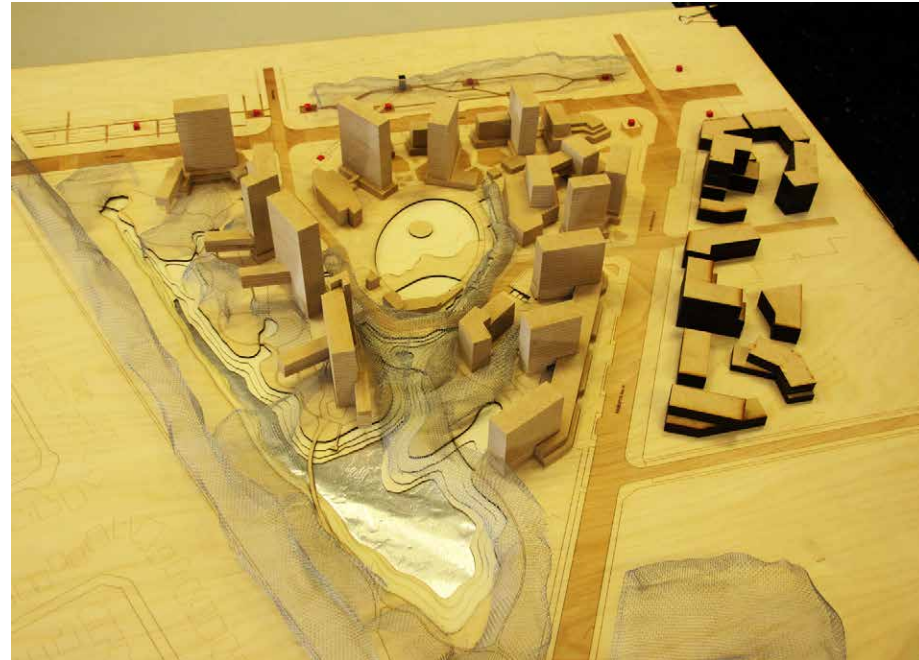
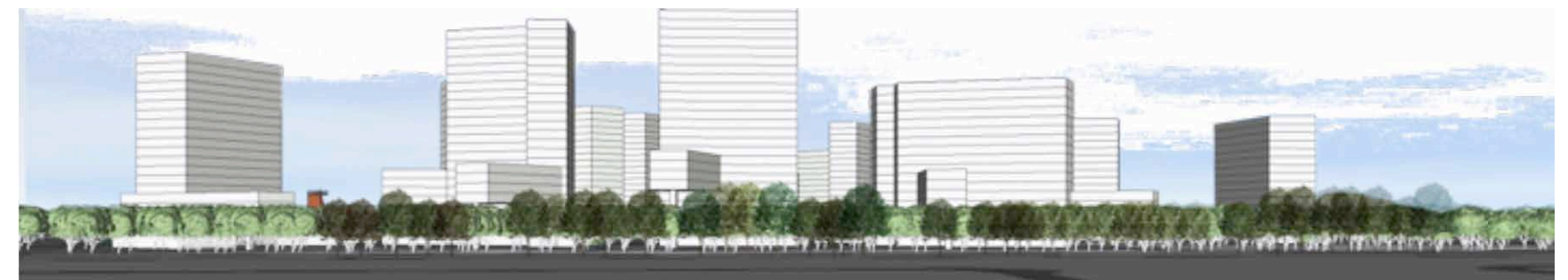
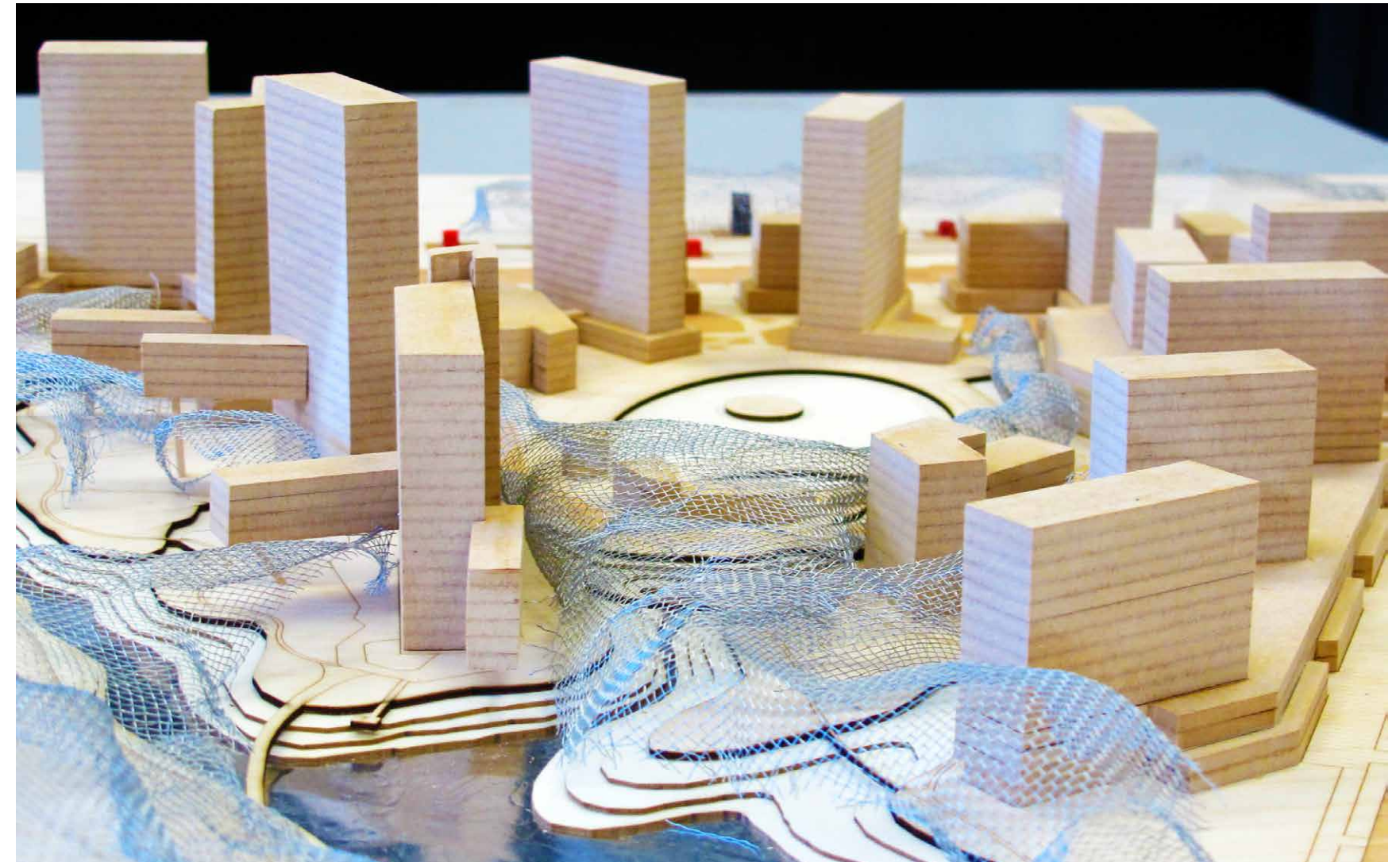


Figure 3.22 Perspectives of nature park and forest living



3.5 Design Proposal

Detailed design: TOD NODE

The TOD node was a mixed-use center in this area, which centralized with the rapid transit station. The station area has a further setback with unique designed public buildings and commercial structures around such as, a new Transcona library, a sport center and some daily use retails. They are usually below 4 stories for creating a public open view and make a welcoming entrance space for the node, where provided gathered place for urban life. It is also the starting point of the social axis which linked into the central park in the middle of the superblock.

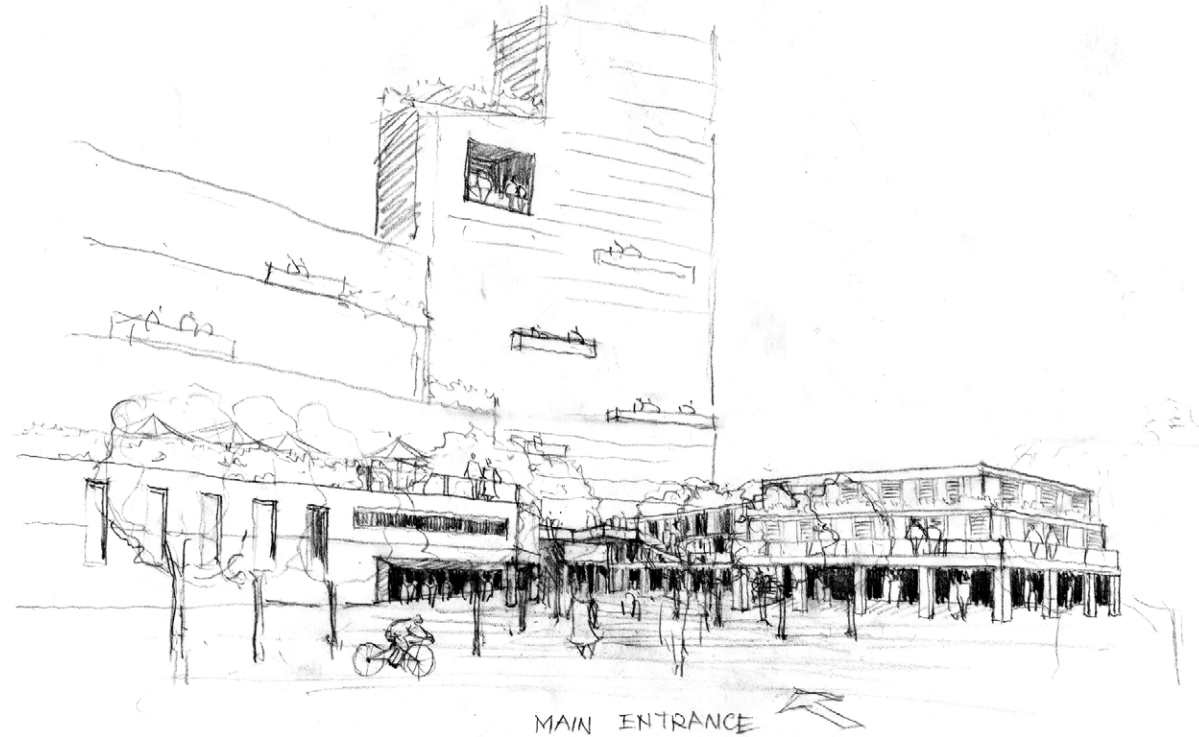
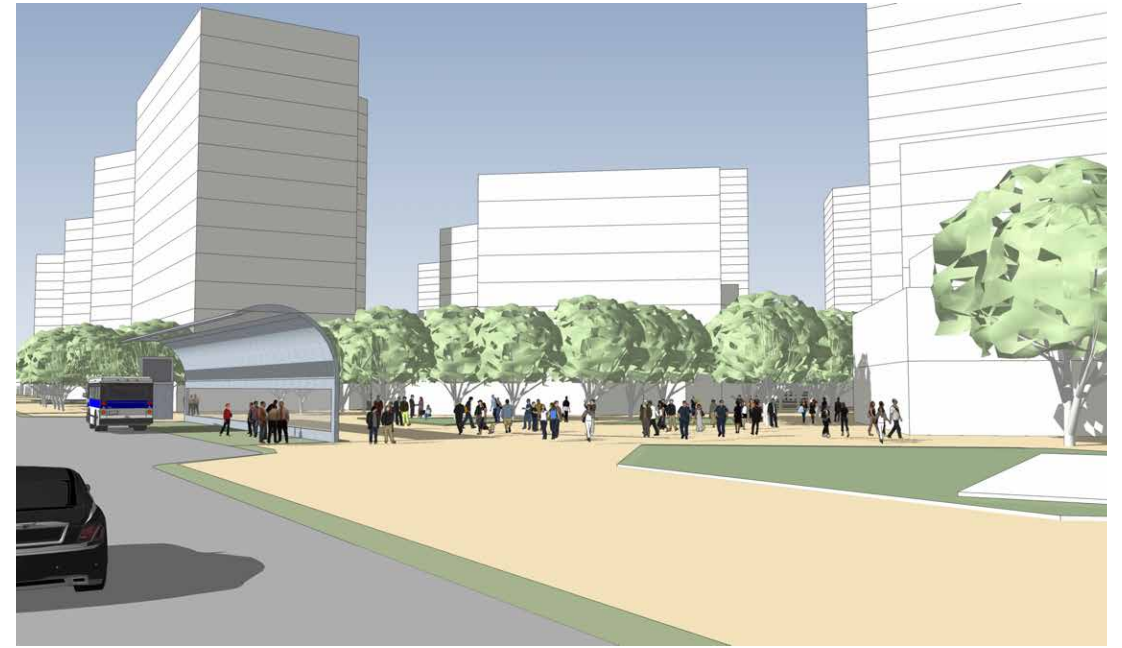


Figure 3.23 Perspectives of TOD node



3.5 Design Proposal

Detailed design: CULTURE PARK

The railway culture park is a community park between the superblock and existing low-density neighbourhood which is developed on the heritage park but emphasizing the railway culture for creating a local identity about Transcona community.

Existing condition: forest patch + grass patch with sculptural heritage setting spots.
 Future perspective: connecting heritage setting spots with jogging and cycling path designed with railway industrial characteristics.
 Industrial sculpture in forest sculptural forest on industrial site
 Connection: each sculpture spot represents a resting area and visually interact with the access to the superblock on the opposite side of Plessis Rd.

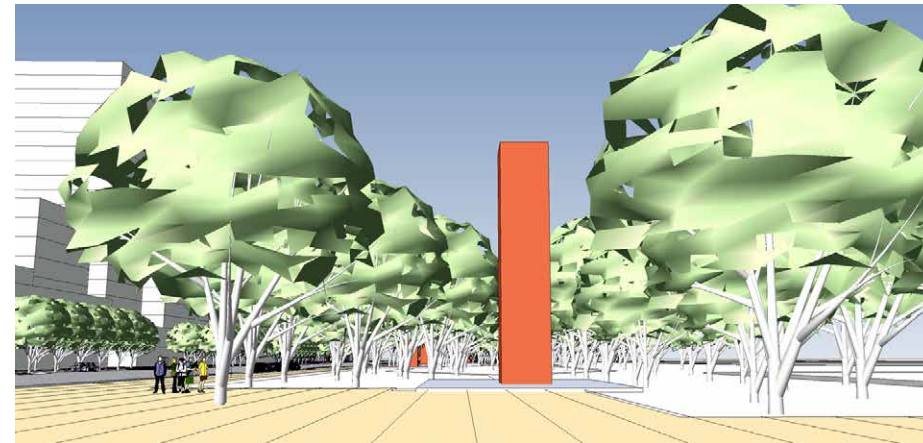
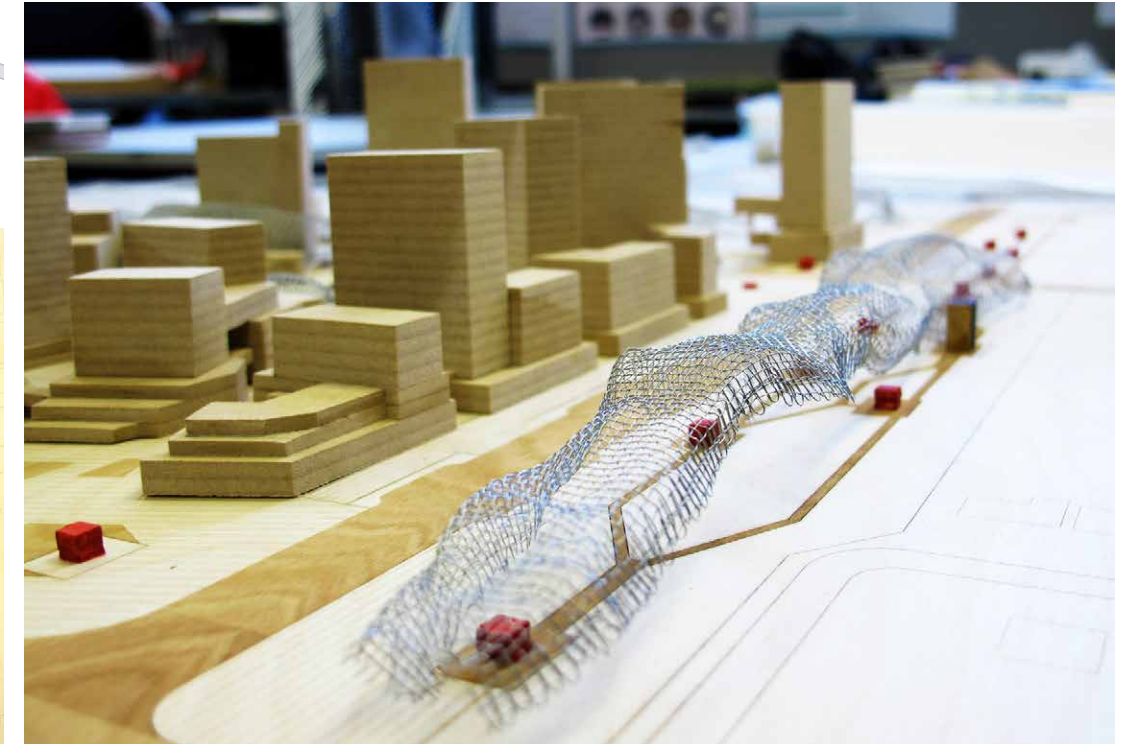
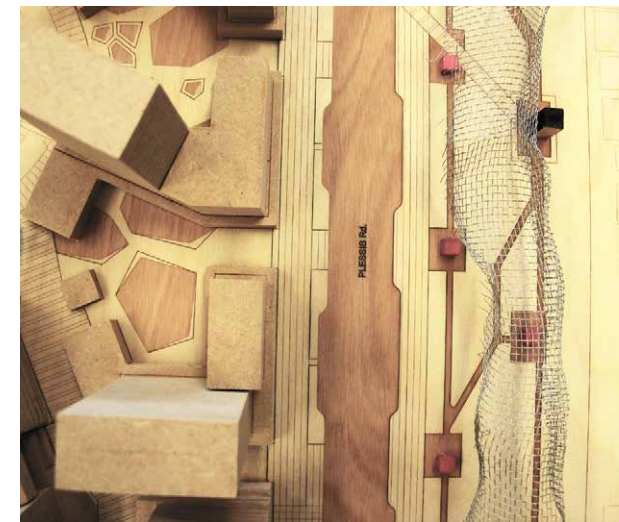


Figure 3.24 Perspectives of culture park

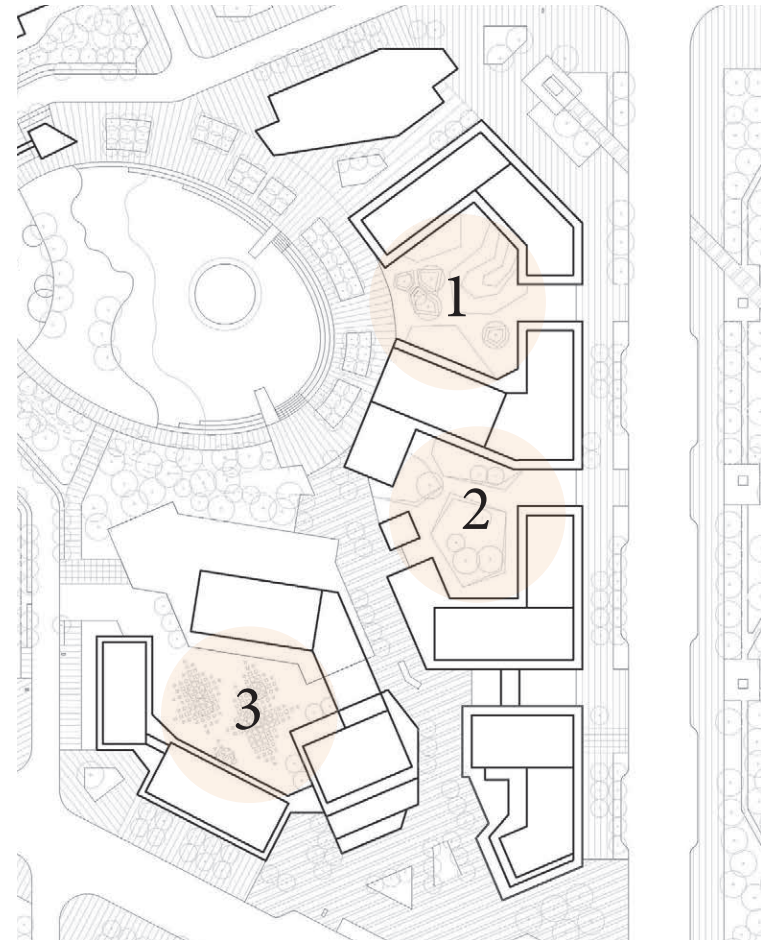


3.5

Design Proposal

Detailed design:
THREE COURTYARD LANDSCAPE

To create a clear sense of place-making in residential landscape design. I used some design vocabularies from local landscape themes in land patterns, culture or history which might aspire people's awareness of the sense of place (Harkness, 1990). These three courtyards are all in the urban style district. Every courtyard is designed with different local perception from different period. I named them, Abstract Nature, Industrial Prairie and Disappearing Prairie, which reflect a landscape evolution of Transcoca from original prairie to industrial movement to Environmental Preservation. These courtyard landscape provide residents a clear sense of place, which respect the local habitat, local history and local culture.



3.5 Design Proposal

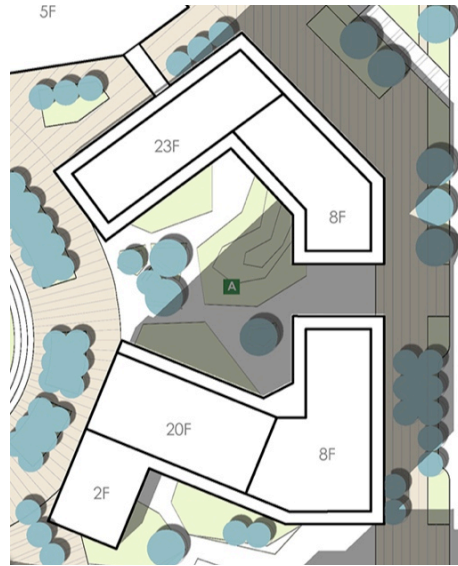


Figure 3.25 Perspectives of abstract nature courtyard

Detailed design: **ABSTRACT NATURE**

The design vocabularies for this courtyard were abstracted from the original prairie landscape, which is usually shown like a picture of a single tree standing beside a grove of forest with endless tall grass prairie background. The design idea is to create a composition of grass patches, grove of trees and single tree at the far end to revise people to memorize the local habitat landscape when they walking through this courtyard.



3.5 Design Proposal

Detailed design: **INDUSTRIAL PRAIRIE**

The second court yard was design for the landscape transformation during industrial development period. The rusted steel broke a path through the tall grass yard and enclosed the planting bed with grass patches, which represents the settlements brought the railway industry to fragment the primitive lands. It is a impressive historical and cultural garden for people's experiencing. The design droved people to be aware of the quiet process of local landscape transformation from the civil development perspective.



Figure 3.26 Perspectives of industrial prairie courtyard



3.5 Design Proposal

Detailed design: **DISAPPEARING PRAIRIE**

The preservation is because of the disappearing. To stimulate people's awareness that the primitive prairie is disappearing. The third courtyard landscape was trying to be created as garden with meaning of disappearing prairie. The idea was using different sizes of squared grass patches to layout a mosaic texture on the ground, which is following people's dominant movement. The squared grass patches gradually disappeared into the path with hard pavement. So when people walking through the yard, the sense of disappearing prairie is not hard to be perceived. It is a profound meaning of garden for habitat preservation.

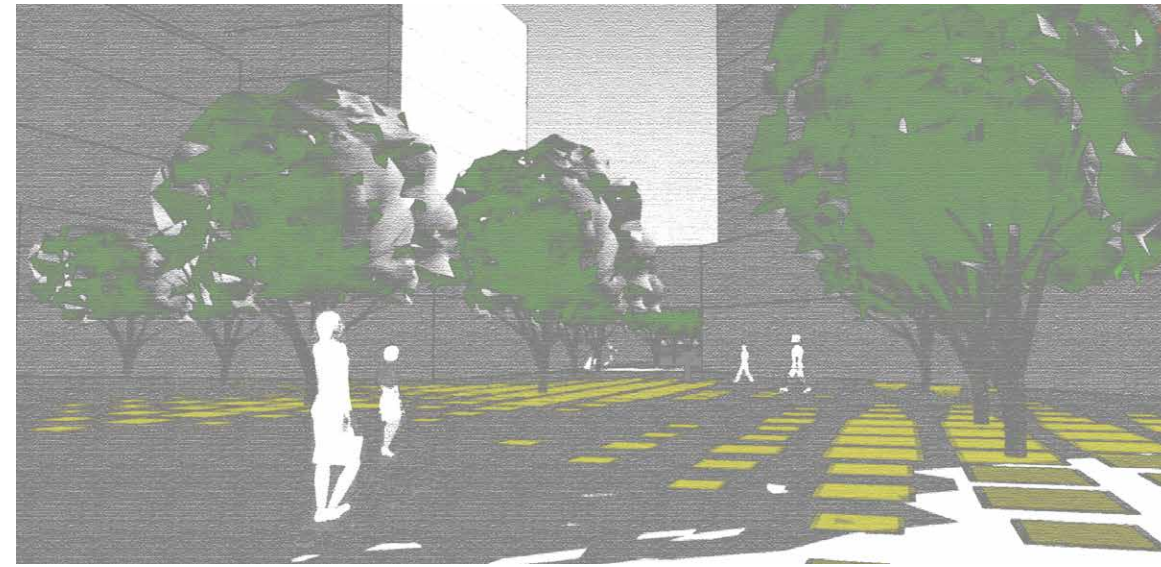
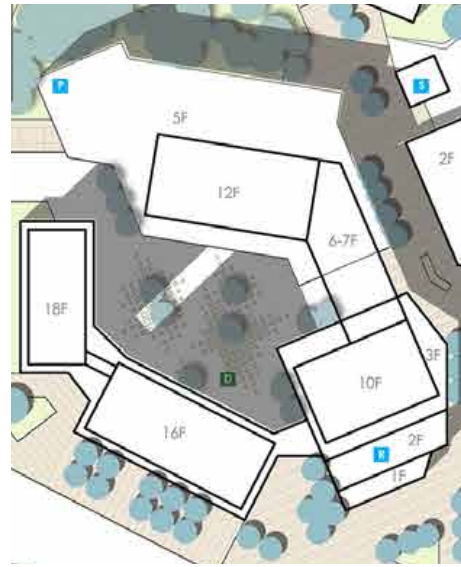
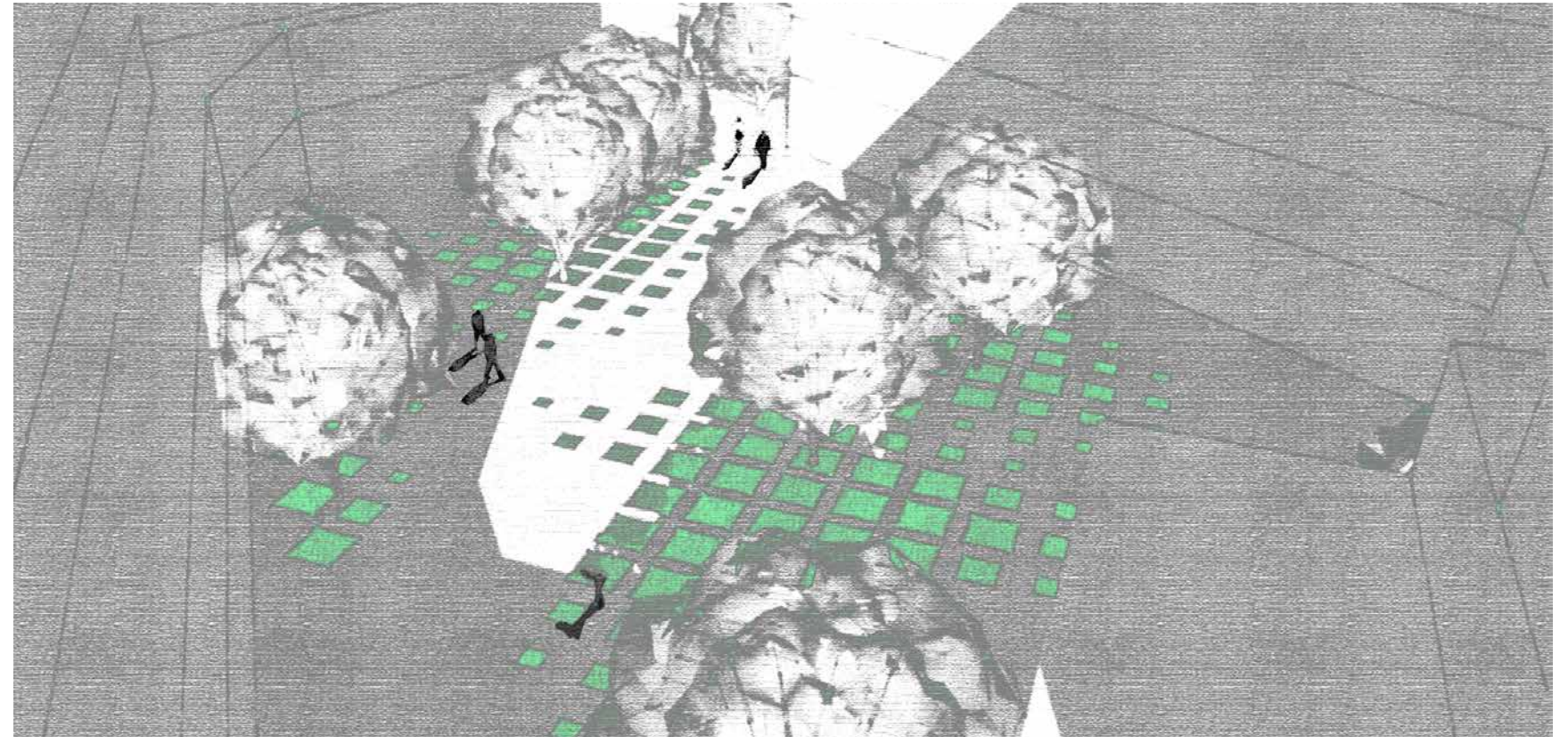


Figure 3.27 Perspectives of disappearing prairie courtyard



3.5 Design Proposal

Detailed design: CENTRAL PARK

Central park is the neighbourhood park in this superblock. It is, an introversive oval shape in the centre, surrounded by different living units and a kindergarten with public facilities. The park provides an great open view among this dense housing block, which makes an clear view connection and convenience access. It also provides people a relaxed, diverse experience around the park for both driving and walking.

Functionally, the park was divided into two underground parts by a curved path. The left part belongs to the kindergarten, while the bigger one on the right is for public use, which has a half side seating steps circled along the promenade, while the other side is naturally sloping to the path in the middle, which make a invisible transformation and enhance the open view with diverse land-form for flexible public use. And there is a pavilion stage pop up in the centre with sloping edge, which can be used for different events or performances.



Figure 3.28 Perspective of central park



Figure 3.3 Perspective from the central park south



CONCLUSION

This is how did this superblock be shaped in my exploration.

As the overall aerial perspective shown on the right, no matter whether you like it or want to live here, this would be a very distinctive urban form in Winnipeg. Currently, this product may not fit the existing housing development situation in Winnipeg, because the high construction cost cannot compete with the single family development on cheap land here. But it is actually an economic way for housing development in high-density countries, so as long as the policy were improved to curb sprawl and encourage high-density, mixed-use, such as increasing property tax and subsidies for high-density housing projects and so on, there may be a balance period for superblock to be accepted in future housing market here.

Superblock is a controversial development model, which is fast, efficient, and also bringing more comprehensive influence to the city and society. It has to be designed more responsibly for both the city and the residents, the public and private places. With the large size and scale development, shaping a superblock is indeed an action of building city rather than a single architecture or landscape design, especially, when it is involved to enhance ecological infrastructure and to construct transportation system.

Landscape architecture will play an increasingly important role and take more and more responsibilities in future high-density large-scale urban design like superblock here. When superblock was not only a building design or land use planning but also somehow building part of the city, either permeation to the urban context or ecological context are all dealing with the urban fabrics. So that, who has the most opportunities for this? There is no doubts, landscape architects.



Figure 3.29 Overall perspective of central park

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