



EVOLVING DANWEI HOUSING

An alternative way to develop former public housing in Shenzhen, China

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MSc Thesis

Key words

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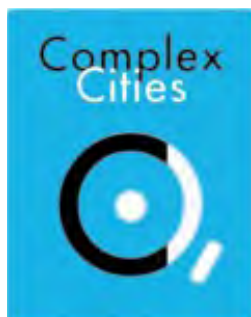
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Cover: Photo of Mutoulong, Shenzhen (by the author)



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1

PROBLEM FIELD

1.1 Context

The city of Shenzhen, situated in Guangdong Province in south China, is one of the fastest growing cities in China. Before 1979, Shenzhen was nothing but several agricultural villages. The starting point of the development was the implementation of Open Door Policy which aimed to modernize China's industry and boost the economy. It introduced market economy into the socialist country which has adopted planned economy. Though state-owned enterprises still control some important industrial sectors, the new economic policy encouraged foreign investment and trade. As a part of the policy, the state established several Special Economic Zones (SEZs) which enjoy privilege in tax and economic policy and aim to attract investment. Shenzhen was one of the first four SEZs because of the strategic location near Hong Kong (Saw and Wong, 2009). Capital and migrants flooded into the new city and lead to the economic boom. Nowadays Shenzhen has become a national commercial centre. In 2012, Shenzhen GDP ranked fourth in China, after Shanghai, Beijing and Guangzhou (Liu, 2013).

Luohu, a district of Shenzhen, is the research area of the project. It is the centre of Shenzhen with a long history. Like other developed cities, it is suffering from land shortage. Urban renewal has become the main way to acquire land for development. It is not surprising that problems and conflicts occur. Before further investigation, some terms and concepts have to be explained.

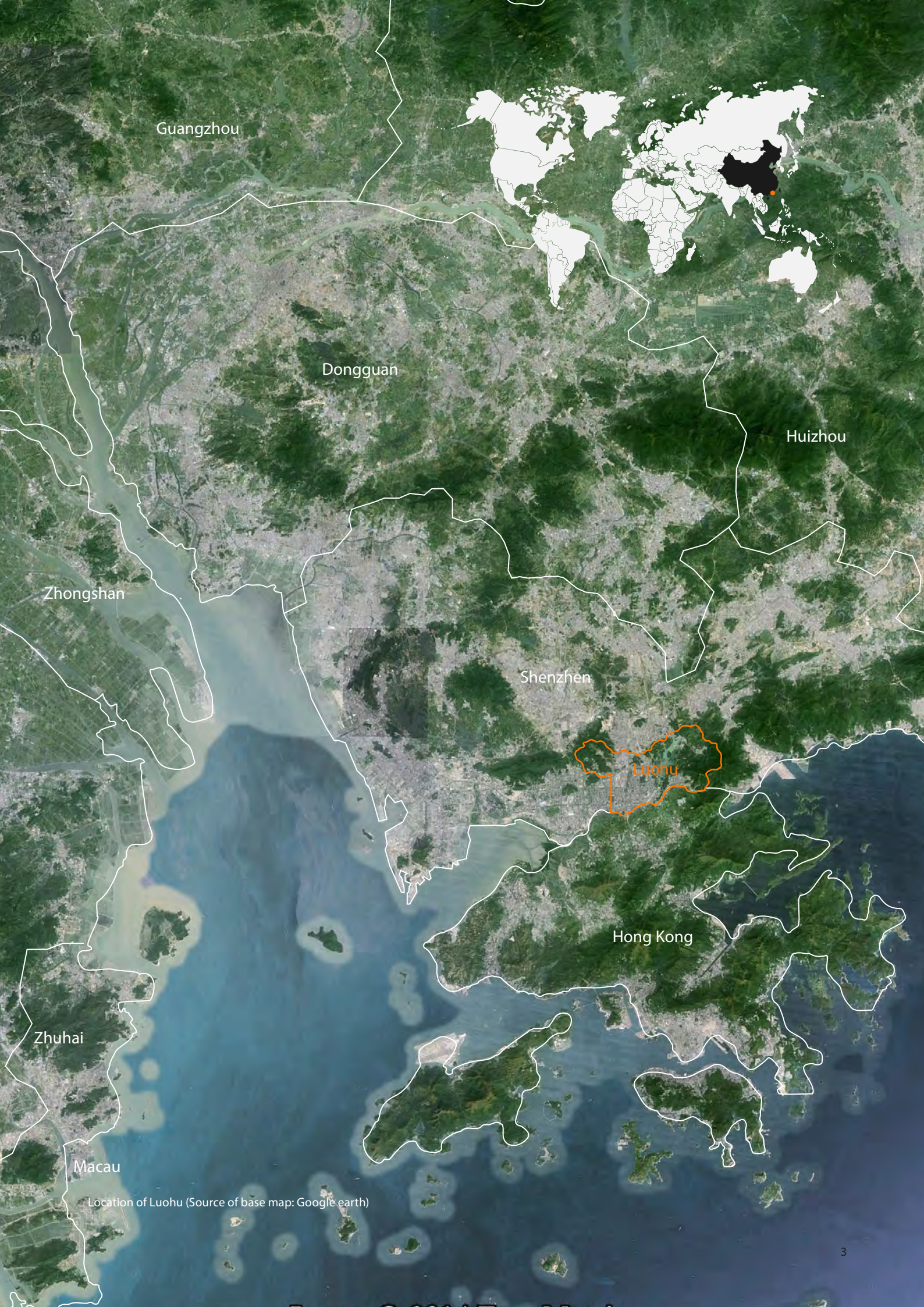
Danwei: work unit

Before the implementation of open door policy in China, economic activities were formulated by the state. Everybody belonged to a danwei or work unit in English, which could be a state-owned enterprise or a department of government. Danwei is more than a workplace. It has a strong control over the society and it acted as the first step of a multi-tiered hierarchy linking each individual with the central political infrastructure. Workers were bound to their work unit. Travel, marriage and having children need permission from the work unit and the work unit was responsible for providing welfare, including housing. People from the same work unit usually live in the same neighbourhood so residents living in danwei housing are more integrated. In many danwei housing neighbourhoods, a sense of identity has formed based on neighbourhood and work unit (Hui, 2013).

Migrant city

Since the establishment of SEZ, millions of migrants have flooded in. Shenzhen now is famous for 'migrant city'. Shenzhen's population is roughly ten million, of which more than seven million are migrants from all over China. However, immigration in China is restricted by hukou, a household registration system. In China, migrant usually refers to those who do not or cannot have a hukou in cities. It is difficult for rural household to register in a developed city like Shenzhen unless they can meet specific conditions such as certain amount of investment or higher education background. People without hukou cannot enjoy the same right as the locals have because occupation, education, social security and housing (application of public affordable housing and sometimes even the purchase of commodity housing) link with one's hukou.

Migrant is a diverse social group in China. Many of the migrants work in labour-intensive industries or low-end service, but this characteristic cannot represent all of them. As time goes by, some single migrants have already made up families and even had children. In recent years, there is a growing number of migrants with higher education background (Bontje, 2013) who work as designers or



Guangzhou

Dongguan

Huizhou

Zhongshan

Shenzhen

Luohu

Hong Kong

Zhuhai

Macau

Location of Luohu (Source of base map: Google earth)

professions in cities. Considering migrants' relatively low income and the inequity of right, the high living cost in metropolis like Shenzhen becomes a burden for them. There is no doubt that the migrant is one of the most vulnerable social groups in Chinese cities.

Dual land tenure system

China's dual land tenure system plays an important role in urban development. Urban lands in China are all state-owned, while rural lands are collective ownership. After the implement of Open Door Policy, the Chinese land system evolves gradually. To accommodate the need of foreign investment, the state allowed private developers to access land by leasing them for a certain period of time. Land ownership was separated from land use rights for the first time. Now, land users were allowed to let, transfer, rent, and mortgage land-use rights. The objectives of the provisional regulations were to reform the land-use system for state-owned land in cities, to rationalize land development and land use, to enhance land management, and to promote urban construction and economic development (Ding, 2003). The reform of land system results in the intense urban development and infrastructure fever.

On-going industrial restructuring and urban renewal

Thirty years of development has turned little fishing villages into an international metropolis. Having achieved great economic success, Shenzhen now enters a transformation period. Due to the heavy land demand for further development, land price keeps rising. Also, the advantage of cheap labour price does not exist anymore. These two changes drive labour-intensive industry, which has contributed a lot to the economic soar, moving away. According to the 11th five-year plan (2006), Shenzhen will focus on creative and knowledge-intensive industries. Human capital and technology innovation will become the new generator for economy. Now new generation of migrants is enlarging their influence in the city. Many young and highly educated graduates come to Shenzhen and are engaged in high-tech or creative industry. They also suffer from the high living cost but they have different demands and interests with their predecessors, which are still to be considered by the city.

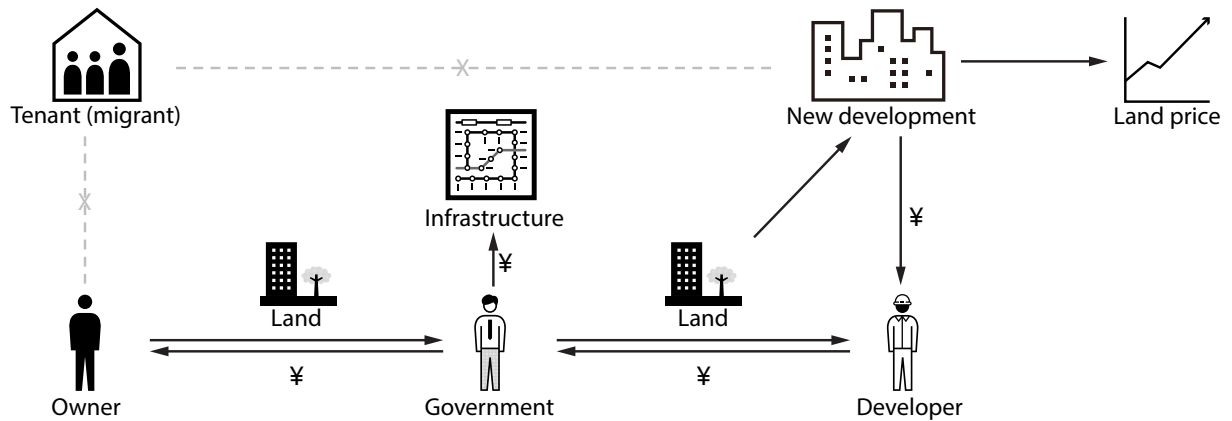
The city is experiencing intense spatial transformation. The retreat of labour-intensive industry leaves behind many old factories. Many buildings built in the early year of SEZ lack of maintenance. The degrading inner city area needs upgrading. Urban renewal becomes the main force that fixes these existing problems. New skyscrapers, shopping mall and high-end housing replace the low-rise housing and small shops. As the surrounding cities in Pearl River Delta also develop rapidly, more people, cargos and capitals flow between cities. The constructions of high speed railway and metro lines not only strengthen the connection between Shenzhen and surrounding cities but also enhance the competitiveness of Shenzhen in the regional and global context.

1.2 Problem

Problems can be classified into two aspects: land-based development and unaffordable urban housing. Land-based development is a significant phenomenon in China that economic growth heavily relies on investment in land and housing. This leads to the problem that lots of people can hardly afford the rocketing urban housing price.



The view of Luohu (Source: Jiajun Zhang)



Current land-based development model

Land-based development

Due to the emerging global economy, urban policy aims to enhance competitiveness by reshaping city and repositioning the city in the global context (Burgess and Carmona, 2009). Strategic planning is adopted as the main tool to achieve this goal.

A strategic plan is a holistic project addressed to inter-sectorial development objectives. It is a framework consisting of proposals for middle and long term actions, accompanied by a mechanism for short term micro planning. Compared with traditional way of planning, it has a different concept of what a city should be. Planning focus descends into parts: individual areas, nodes, infrastructure networks (Burgess and Carmona, 2009). As the basic element, large urban projects embody the idea of strategic plan and intervene in the crucial area. Large urban projects are large scale and wholesale developments. They usually involve mixed functions including commercial zone, residential area, transport, etc. Their goals are to upgrade inner city and attract investment. Large urban projects strategically enhance urban function and network. In Shenzhen, large urban projects exist together with the city centres or sub-centres, which are considered to be crucial for the city's future development. This type of development mode is necessary and effective in improving city's competitiveness under the current trend.

Large urban projects involve huge area of land, huge amount of investment and various stakeholders. There is consensus that government or developers alone can hardly carry out large urban projects. Cooperation of government and private developers is needed. In China, the cooperation takes place in the way that government collects land from land owner and developers purchase land from government. During the development procedure, only the public sector and people or organisations who have property can participate. People such as tenant who do not have property are excluded. Government wants to enhance infrastructure with revenue from land sale and developers want to make profit from new developments. Economic interest and land shortage together increase the land and housing price. The rising housing price stimulates speculation and even pushes the housing price higher. The low-income group cannot afford to buy their own housing. Even some of the middle class find it unaffordable to purchase housing. Though the current development model is efficient and can greatly improve the competitiveness of the city as a whole, it lacks of consideration on individual and local interest.



Development focuses on high-end shopping malls, offices and housing, which are unaffordable for low-income group (photo by author)

Urban housing problem

Danwei housing is the public housing provided by work units to their workers. Before the implement of Open Door Policy, a large number of urban residents lived in danwei housing. However, the provision of public housing cannot meet the growing urban housing demand. In 1980s, housing reform was carried out. It allowed private housing development and tried to tackle urban housing shortage by means of market provision. One of the main policies was commercialising public housing by selling them to the danwei staff with low price (Chen, 2012). Public sector also retreated from the daily administration of the neighbourhoods, which was expected to be operated by the marketized property management.

Although some of the public housing was built at the urban fringe thirty years ago, now most of them become parts of downtown because of rapid urban expansion. Therefore, they have good connection

to public services, commercial districts and transport. To satisfy the huge housing demand, these residential areas were built all over the city. Large population of the Chinese urban residents still live in this type of neighbourhood.

However, low design standard and lack of maintenance lead to degradation of these old residential areas. Informal development becomes the main force that maintains and transforms the neighbourhood. For example, inhabitants convert the ground floor of the housing into stores. Some public space is occupied for private use. Because of the cheap rent, many low-income people settle in. It has become a kind of affordable housing for social disadvantaged groups. There is a risk of social segregation in these former public housing neighbourhoods.

Relatively central location, large number of neighbourhoods spreading around city and socio-spatial degradation make them attractive sites for urban redevelopment, especially for shopping malls, high-rise office and high-end housing. As a result of the housing reform, the fragmentation of ownership greatly increases difficulty for redevelopment. Some owners require high compensation which consequently increases the land and housing price. Conflicts between owners and developers or owners between owners are quite common. It always takes a long time for house owners and developers to form consensus on the redevelopment project.

In consideration of the unaffordable housing price, Shenzhen government has provided affordable housing for disadvantaged group in recent years. Government's system of affordable housing does not function well because of the remote location of houses and the limitation on applicant. Dominated by the priority of economic growth, government's affordable housing system cannot meet the actual need of the disadvantaged group and thus cannot solve the urban housing problem.

Problem statement

On one hand, the current development model is a centralized and top-down procedure, which contradicts with the individual needs of neighbourhoods. The contradiction leads to difficulties in urban renewal. On the other hand, the model focuses on public interest, that is, the competitiveness of the city. The migrants, including the low-skilled workers and young professionals, are suffering from the unaffordable housing price. The interest of the social disadvantaged groups is less concerned by the public authorities. Degrading socio-spatial conditions of the old neighbourhood lead to redevelopments which finally lead to unaffordable housing price. Problems both lie in the process and the result of the current development model. The problem is that:

Land-based development model focuses on public interests, which is economic prosperity, but lacks enough consideration on local interests in danwei housing neighbourhood, which is affordability.

Since deterioration is taking place in danwei housing neighbourhood, intervention is needed to reverse the negative conditions. Urban renewal under land-based development model mainly targets at economic profit. **This project aims at a more balance way of urban renewal for danwei housing neighbourhood that not only contributes to economic prosperity but also:**

- **Enhance housing affordability for disadvantaged groups;**
- **And improve socio-spatial conditions.**



'Danwei' housing in Luohu (Source of base map: Google map)



Typical 'Danwei' housing (Source: superjie)

2

RESEARCH QUESTION

Based on the analysis above, the main research question is:

What kind of urban renewal strategies can enhance housing affordability for disadvantaged groups and improve socio-spatial conditions of danwei housing neighbourhoods in Shenzhen as well as contribute to economic prosperity?

To better understand the main research question, we first need to think about:

- What is housing affordability in Chinese context?

After that, it is necessary to investigate the physical and social contexts of danwei housing. Here are the two sub research questions:

- How can danwei housing contribute to the city development under the conditions of on-going industrial restructuring and urban renewal?
- Which current socio-spatial conditions strengthen or weaken the danwei housing's role of affordable housing?

The last sub research question concerns with institutional aspect. It is:

- How do historic conditions and governance affect the socio-spatial condition of danwei housing?

Relevance

Thus, the central issue of this project is affordability, which is relevant with both social reality of China and social science. First of all, as the land price continues rising, there is greater demand in affordable housing. Though Shenzhen government has provided different types of affordable housing for different income groups, the official affordable housing policy does not resolve housing problem well because of remote location and lack of public facilities. The project suggests a more effective way to satisfy the growing need for affordable housing. Second, the conflict in the redevelopment process and the inequality caused by the interest-driven development gain a lot of social concern. These two issues are considered as the obstruction for constructing a 'harmonious society', which is a main task of the authorities. The project intends to provide an alternative developing method that produces less conflict and inequality.

Second, the project will not only contribute to the reality of Shenzhen but also provoke discussion on danwei housing, a spatial concept with Chinese characteristic. How does this spatial concept evolve? How can the concept influence future Chinese urban development? This is an unavoidable topic when we discuss about urban regeneration in Chinese context.



Construction fever of skyscraper reflects the expectation of economic growth. (photo by author)

3

METHODOLOGY

Affordability is the central issue of the project. First of all, theoretical research on the term 'affordability' sets up a solid foundation for further analysis on context. Second, analysis on socio-spatial conditions and institutional conditions helps to build up a complete image of danwei housing and find out the hidden factors that influence physical and social environment of danwei housing. Third, based on the analysis of context, general strategies will propose interventions that can achieve the goals mentioned in previous section. The final section is renewal schemes of selected sites.

Theoretical framework

The research starts with exploring the term 'affordability'. It has already been discussed for a long time so it is necessary to review the previous studies. The review involves some important problems related to affordability. For example, what is housing affordability? How does affordable housing relate to social and economic issues? What is the ethics of housing? How to measure housing affordability? What increases housing price or rent? The interpretation of previous study will be combined with Chinese reality.

Socio-spatial conditions

This section consists of analysis on two scales. District scale analysis aims to understand danwei housing in the context of Luohu district, where most of danwei housing neighbourhoods are located. Neighbourhood scale analysis investigates the spatial layout and programs taking place inside neighbourhoods.

Institutional conditions

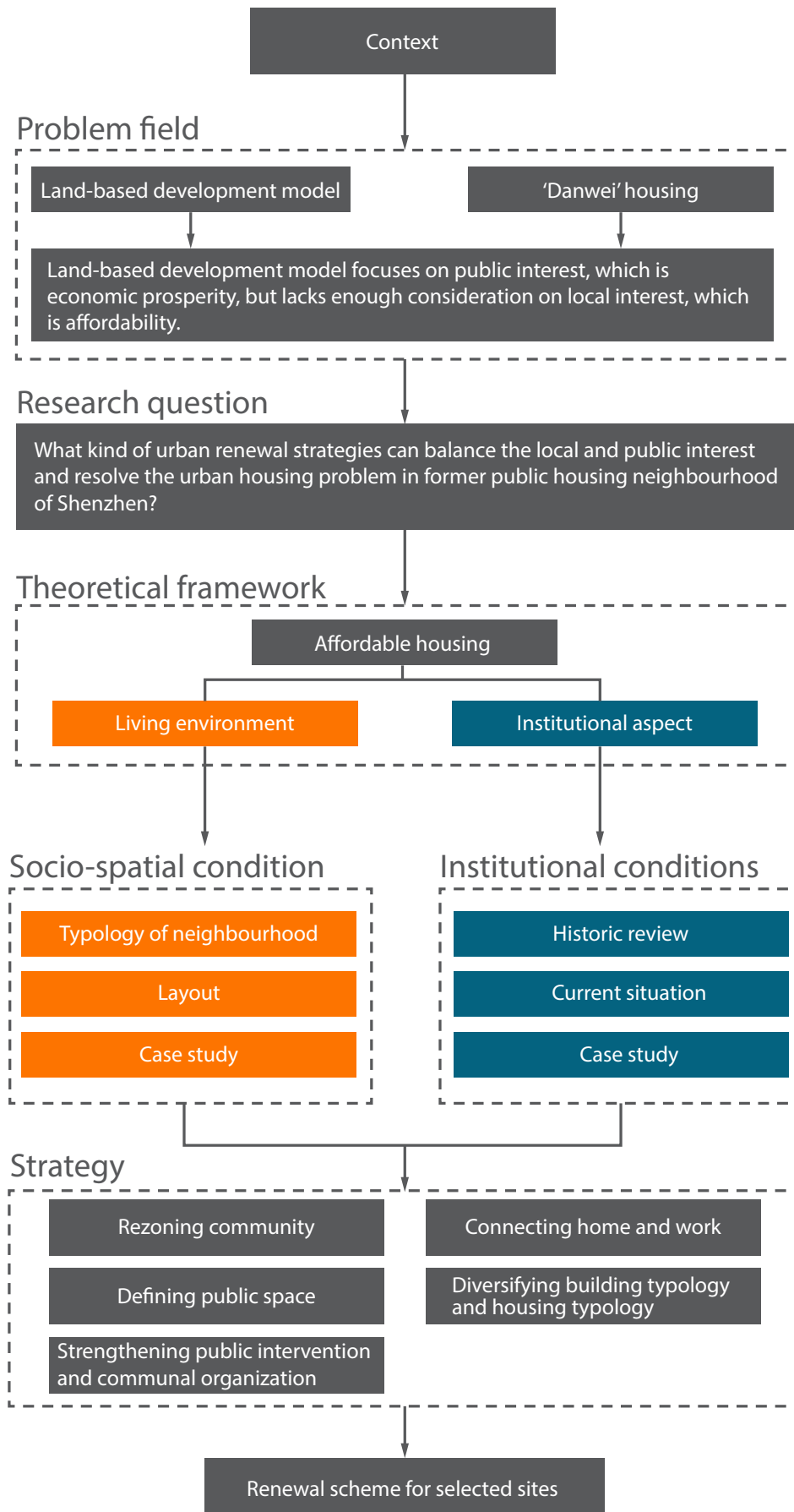
Institutional conditions focus on Chinese housing reform and governance structure. Housing reform which began at 1980s has great physical and social impact on including danwei housing in China. The Chinese grass-root governance structure is quite different from that in western world and it cannot be skipped when we discuss the maintenance of neighbourhoods.

Strategy

These strategies are applicable for all danwei housing neighbourhoods in Shenzhen. Instead of firm interventions, the strategies act as guidelines for improving conditions. They are also tools for understanding the existing situation of particular danwei housing neighbourhood.

Renewal schemes for selected sites

When strategies are applied in different neighbourhoods, there will be different result because of different conditions. More than one site will be selected to show the differences of result.



4

CONCEPTUALISING HOUSING AFFORDABILITY IN CHINESE CONTEXT

Housing affordability is an inextricable term. This section will combine the review of literatures that discuss issues related to affordability and Chinese reality. Based on review and analysis, it discusses what kind of affordable housing should be provided and how it can be provided. Discussion will start with the concept of housing affordability.

4.1 Housing affordability

What is housing affordability?

It is difficult to conceptualise housing affordability. As John and Steven state:

Affordability...jumbles together in a single term a number of disparate issues: the distribution of housing prices, the distribution of housing quality, the distribution of income, the ability of households to borrow, public policies affecting housing markets, conditions affecting the supply of new or refurbished housing, and the choices that people make about how much housing to consume relative to other goods. This mixture of issues raises difficulties in interpreting even basic facts about housing affordability (Quigley and Raphael, 2004).

Nevertheless, housing affordability has something to do with living environment. 'Affordability' is concerned with securing some given standard of housing (or different standards) at a price or rent which does not impose, in the eyes of some third party (usually government), an unreasonable burden on household incomes (Maclennan and Williams, 1990). Affordable housing should provide a decent living environment which should be within inhabitant's affordability. A 'decent' living condition is one of the central issues of housing affordability.

Affordable housing and socio-economic issue

The current development model emphasizes economic growth but lacks consideration on affordability. In fact, lack of affordability can contribute little to economic prosperity. Housing affordability has implications not only for housing but also for employment, health, labour market performance, aged care, finance, community sustainability, economic development and urban and regional development (Gabriel et al., 2005). A lack of affordable housing can make it harder to attract and retain a growing number of businesses, jobs, and employees who are making location decisions based on the quality of life and diversity of an area (Pollard, 2010). Particularly, low-cost labour will be scarcer. Lack of affordable housing in city increases demands on transportation systems because low-income groups have to search for cheap housing at more distant area. Long commutes often result in higher transportation costs that erase any savings on shelter (Pollard, 2010). What's more, high housing cost cuts back on consumption and do harm to economic growth consequently. As a result, affordability can contribute to prosperity of economy.

According to Michael, 'Affordable' housing can have meaning (and utility) only if three essential questions are answered (2006):

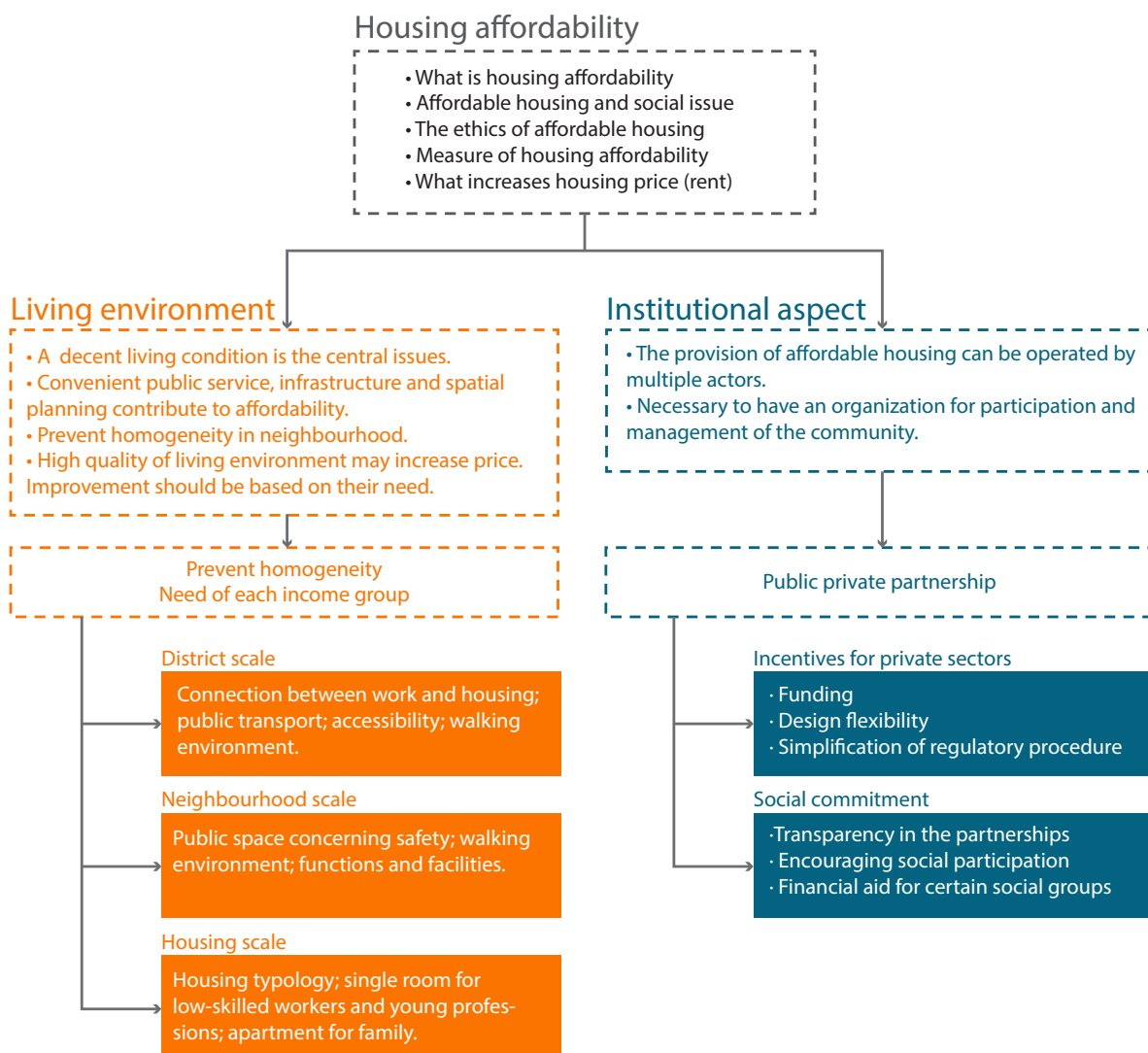
- Affordable to whom?
- On what standard of affordability?
- For how long?

These three questions emphasize the social impact of affordability and will be answered with close

attention to Chinese reality.

Affordable to whom?

Affordability of different households means different capacity to obtain housing. Some may afford all kind of housing no matter how expensive it is while the others may not afford any unless it is free. In Chinese cities, the low-income group who suffer from unaffordable housing price mainly consist of migrants. Without hukou, migrants are not considered as a part of the urban housing provision system by Chinese housing policy makers. Many scholars also support this policy and argue that most rural-urban migrants have houses in their rural hometown and, accordingly, have no right to enjoy the provision of urban public housing. This suggestion is based on an assumption that all rural-urban migrants would return to their hometowns and continue to live in their houses there. However, this assumption is disproved by the fact that more and more rural-urban migrants choose to reside



Theoretical framework

in urban areas over the long term (Chen et al., 2011). In private sector housing market, the expensive commodity housing which has decent living environment drives them to settle in cheap housing, for example, in urban villages which is much more unliveable.

Besides the low-income group, housing affordability also relates to other income groups. Affordability often exists together with socio-spatial segregation, which is concerned with the relation between high and low income groups. In China, a great number of new private sector housing, among which there are many luxury housing, are completed every year, while old public housing is degrading without enough maintenance. Spatial division in housing rent or price emerges. Low-income groups concentrate in degrading neighbourhood and socio-spatial segregation may emerge. But socio-spatial segregation is not always bad. Location of housing is a determinant of a person's access to the job market, transportation, education, healthcare, and safety (Ceylan, 2007). If the low-income groups' choice of housing with good location is narrowed, it can be defined as a negative one (Kruythoff, 2003). The prevailing land-based development model is threatening low-income group's chance of enjoying the convenience in city centre.

How to deal with this negative socio-spatial segregation? Probably, mix of different income groups can be a solution. The nature of housing shifts from necessity to commodity. Management of housing shifts from public responsibility to individual or collective responsibility. Such changes have not yet completed. The shift of management responsibility results in lack of maintenance of buildings and, therefore, decline of the neighbourhood. Also, compared to emerging private sector housing, former public housing has low design standard. High-income group leaves due to degradation while low-income group (migrants, young profession) move in. They prefer rental housing and more tend to move. They are not as wealthy as the middle class and are less desire to participate in maintaining the neighbourhood. There is an association between homeownership and improved property maintenance (Rohe et al., 2002). Homogeneity of low income group may label the neighbourhood as a 'poor area' and restrict the residents' future enhancement. Current research has not come about a conclusion of the effect of the rate of owner-occupied housing (Haurin et al., 2002). According to Helen (2003), homogeneity on a small scale will be appreciated even when homogeneity on a larger scale – and concerning poverty – is experienced as threatening. The scale of appreciated homogeneity should be based on historic conditions.

On what standard of affordability?

Households living in inadequate housing suffer from certain form of housing problem, for example, over-crowded condition, inaccessible housing location and unreliable architectural structure. They are not able to satisfy certain need within their capacity. The standard of affordable housing has to meet the need of low-income group. Since migrant is a diverse social group, their needs are also diverse. The need of higher income group also needs to be considered if we want to prevent them from leaving the degrading neighbourhoods.

For how long?

In China, low and mid-low income groups both suffer from high housing price. Before most of the people can afford decent housing on free market, affordable housing should be kept 'affordable'. Even if transformation in neighbourhood is allowed, affordable housing should not be upgraded to high-end housing at the current stage. In the future, when the low-income inhabitants can afford or

decide to settle down, it is possible for them to upgrade living standard through resettlement in the same or other neighbourhoods. It is also possible to upgrade by transformation of housing. However, it is necessary to keep a certain rate of housing typology in order to keep the role of affordable housing with decent living condition. The rate definitely can be flexible according to the dynamics of social conditions.

Conclusion

It is necessary to improve housing condition for disadvantaged group and promote social mix. Homogeneous neighbourhood may harm disadvantaged group's opportunity of self-enhancement but small scale concentration is appreciated. Affordability problem should consider household and their current and future need and relate them with quality of living environment. In China, low and middle income groups suffer from high housing price. At the current stage, affordable housing should be kept 'affordable'.

The ethics of affordable housing

In Netherlands, social housing organisations ensure an adequate supply of affordable, good-quality homes for the less privileged in society and those on lower and middle incomes (Aedes, 2013). In the United Kingdom public housing is often referred to by the British public as "council housing" which aims to supply uncrowded, well-built homes on secure tenancies at reasonable rents to primarily working-class people. These terms, public housing, social housing and low-rent housing aim at securing decent housing for the disadvantage groups. In recent years, affordable housing has been a common term to cover these concepts related to solving housing problem.

According to Gabriel et al. (2005), the term 'affordable housing' gains popularity because of the following reasons.

- The term potentially is tenure neutral and as such is viewed as a more appropriate description of the realities of contemporary housing policy. Currently, government subsidies intended to improve affordability include assistance to public and community housing, but also to private tenants and to homeowners.
- Second, the ubiquity of affordable housing in policy discourse is indicative of the success of lobbyists representing private sector interests to recast debates policy away from the funding of public housing investment and towards subsidies for private investors and the building industry.
- Third, the notion of affordable housing is symptomatic of a shift in social policy generally away from collective provision towards individual responsibility. The term 'affordability' denotes an individual's capacity to exercise choice in the marketplace.

The popularity of the term 'affordable housing' reflects the adoption of neoliberal housing policy. Government develops various ways to assist disadvantaged group to obtain decent housing instead of only distributing housing to people in need. Private capital involves in providing public service and products. Market freedom becomes the main concern. Neoliberalism changed the notion that social well-being is a responsibility of government. Providing housing for disadvantaged group becomes a burden of the whole society and is operated by multiple initiatives.

Measure of housing affordability

Affordability is a relation between income and price. 'Affordability' is concerned with securing some

given standard of housing (or different standards) at a price or rent which does not impose, in the eyes of some third party (usually government), an unreasonable burden on household incomes (Maclennan and Williams, 1990). Income is the primary factor — not price and availability, that determines housing affordability (Bratt et al., 2006). There are diverse and incompatible definitions of housing affordability in consideration of income. Michael (2006) make a conclusion of five ways to measure housing affordability.

- Relative—changes in the relationship between summary measures of house prices or costs and household incomes
- Subjective—whatever individual households are willing to or choose to spend
- Family budget—monetary standards based on aggregate housing expenditure patterns
- Ratio—maximum acceptable housing cost/income ratios
- Residual—normative standards of a minimum income required to meet non-housing needs at a basic level after paying for housing.

He advocates the last one for following reasons. Non-housing necessities such as food, housing furnishings and operations, transportation clothing, medical, other goods and service, child care can be a burden for disadvantaged group. High cost on non-housing necessities reduces flexibility of housing choice. This implicates that certain kind of improvement of living environment like appropriate public service, design and planning and infrastructure can reduce non-housing cost and contribute to affordability as a result.

What increases housing price or rent?

As mentioned above, affordability is a relation between income and price. Improvement of certain quality of living environment can probably increase households' affordability from income side. So, what increases housing price or rent and reduce affordability?

Hedonic pricing theory is used as a method of estimating housing value. It is based on the idea that price consists of two parts, constituent parts which involves 'taste', and willingness-to-pay for the 'taste' which are proxied by income and other socio-economic factors (Boardman, 2010). Constituent parts are all kinds of influential environmental quality of housing, for example, scenic view, its distance from the central business district, its lot size, and various characteristics of its neighbourhood (Boardman, 2010). Good environmental quality will obviously cause high housing price. High-income group are willing to sacrifice more to procure housing for high quality. At the current stage, big Chinese cities suffer from land shortage and growing urban population intensifies urban housing demand. In the condition that supply is much less than demand, developers tend to satisfy the demand of the people who can pay more. Although housing supply grows year by year, high-end housing represents a large portion of private sector housing stock. Imbalance supply in market of different levels illustrates the image of high housing price.

Taxes and institutional cost contribute to high housing price. Though taxes vary in cities, it is estimated that those taxes contribute one-quarter of the price of a home (Yu and Fun, 2014). The lengthy administrative process has pushed up developers' costs, which has, in turn, led to higher housing price. Government's revenue relies on taxes from prosperous housing stock, so housing price still maintains a high level despite years of regulation and control. However, those taxes probably can cross-subsidize the social housing to some extent.

An inextricable term

Housing affordability is an inextricable term, but first of all, a 'decent' living condition is one of the central issues. Convenient public service, infrastructure, design and planning contribute to affordability. Affordable housing concerns not only low-income groups. Homogeneity may harm low-income group's opportunity of self-enhancement. Social mix is necessary. In China, low and mid-low income groups suffer from high housing price. In the near future, affordable housing should be kept 'affordable'. However, high quality of living environment may increase price. Affordable housing has to consider target groups' urgent need and relate them with quality of living environment. Second, housing policy should facilitate disadvantaged group's accessibility to decent housing. The construction and management of affordable housing can be operated by multiple actors instead of only government. Providing housing for disadvantaged group becomes the responsibility of the whole society.

4.2 Affordable housing and living environment

A 'decent' living condition is one of the central issues of housing affordability. The living environment should be based on target groups' need. Social mix is also necessary for the neighbourhood, so various income groups should be taken into consideration.

Lower income group

In Shenzhen, low-income group mainly consists of migrants. Although they have different background, they settle in city in order to search for their career and consequently, job becomes their first concern in their daily life.

A survey on migrant workers' housing conditions in Shenzhen was carried out by China Academy of Urban Planning in 2009. It has clearly demonstrated the living condition and expect of the migrant group. While old generation of migrants will finally return to countryside, more than 60% of the migrants are 'new migrant workers' who hope to live in the cities in the future. The expectations to settle in cities distinguish new migrants' need from their predecessors'.

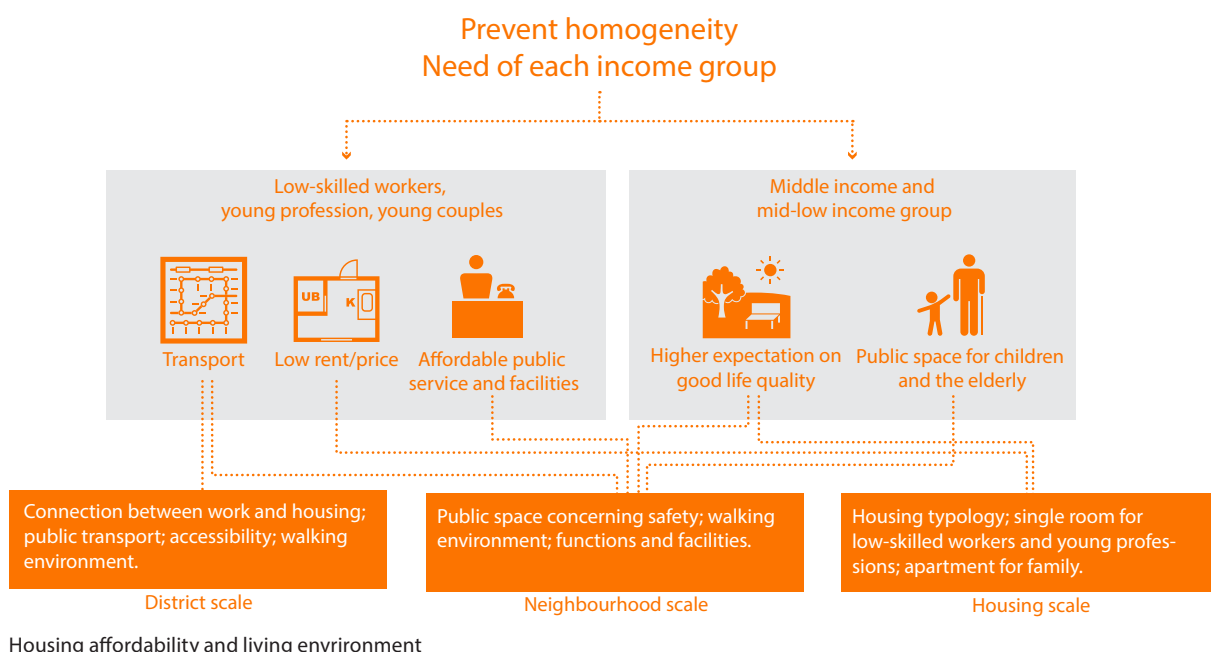
Their housing choice includes rental housing and dormitory, which are mostly private-rented or provided by employer. They cannot benefit from government's affordable housing system because many of them have higher income than income limits for affordable housing. Migrant workers come to cities not for minimum wage and minimum living security, but based on rational choice under the background of market economy. At the same time, they cannot afford to buy economic affordable housing unit. They usually share a room or apartment with others and overcrowding is not uncommon. This also results in inadequate facilities such as bathroom and toilet. They mainly commute on foot. 79.6% spend less than 20 minutes on commuting while average time in Shenzhen is 46 min. When it comes to employment conditions, 65.4% work in retail, hotel, catering and other services, 15.5% in manufacturing sector, and 4.1% in construction sector. The average monthly income is 2968 yuan (3894 yuan in Shenzhen). The average monthly expenditure is 1832 yuan. Their rent-to-income ratio is relatively low. Average monthly rent is 525 yuan and the rent-to-income ratio is 17.7% (reasonable ratio is below 25%).

The survey reveals that migrants prefer housing close to workplace and rent. Income is the major barrier in improving housing conditions. They expect that government will improve the environment of urban villages, where many of them live now, and provide more cheap rental housing close to workplace.

To sum up, work is migrants’ first concern. Cheap housing which is close to workplace can gain popularity among migrants. It is easy to explain this result. Moving farther out in search of affordable housing often leads to higher transportation costs that eat up any savings on housing (Pollard, 2010). However, the hidden transportation costs arising from housing location are often poorly understood. Such costs, however, highlight the need to consider—and address—transportation costs and patterns in promoting affordability. It may be more useful to concentrate on the broader need for affordable communities rather than just affordable housing (Pollard, 2010). There are some key elements that affect the relation between home and work when planners design or plan affordable housing:

- Mixed use: mixing residential and commercial uses can reduce commute time and cost;
- More housing near jobs: it is better to develop affordable housing for low income groups where there are more job opportunity;
- More choices of transport: more choices improve the connection between housing and the rest of the city;
- Walkable, compact development: walking is the cheapest way of transport.

Besides work, it is necessary to consider migrants’ leisure time. There is a great need for leisure and entertainment. In an industrial district of Shenzhen named Dalang, where more than 400 thousands migrants live, social interaction and many communal activities emerged as soon as a square was built. This case reveals the desire for public space and public space can stimulate the communal vitality.



Hendrikse (2013) found that most migrants don't tend to do many leisure activities at home. They tend to spend leisure time in (semi-) public spaces. Although not quite often mentioned, those migrants renting their own apartment are more likely to do activities like reading or surfing the internet at home.

Work impact on leisure pattern (Hendrikse, 2013). Differences in leisure activities between blue and white collar workers directly related to their type of employment. White collars more tend to self-cultivation and meeting new people. Blue collars, less leisure because of long working hours.

Income is the major barrier in improving housing conditions for migrants. Work is their first concern. There are several ways to strengthen the connection between home and work: mixed use, more housing near jobs, more choices of transport and walkable, compact development. Moreover, migrants have a great need for leisure and entertainment. They tend to spend leisure time in (semi-) public space and job impacts on leisure pattern. This indicates that public space in affordable housing should be strengthened for social interaction and can contain various types of leisure activities.

Middle income group

Those who can afford commodity housing are people with higher income. They have been in Shenzhen for years, and are during their middle age, and succeed in their career. Usually they are private entrepreneurs, professionals, managers, government officials, small employers. Cheng (2010) describe them as the Chinese middle class. They are the people who can afford commodity housing. Low design standard and deterioration drive those who can afford private sector housing to leave the degrading neighbourhood. New home buyers do not take danwei housing into account because of the same reason. In order to promote social mix, improving specific housing quality can encourage household with higher income to stay or return.

In China, consumption has emerged as the single most important means of expressing social identity (Elfick, 2011), especially for the middle class. They can afford car, bigger house or private garden to make social distinction. More housing diversity can satisfy their need for showing identity. Most of them have family with at least one child. However, their children rarely use public space alone because there is lack of parochial realm (Opbroek, 2013), which indicates the lack of safety and privacy. Sometimes they live with retired parents. Facilities for the elderly are also an important issue.

Conclusion

In the above paragraphs, the need of different income groups has been analysed. Since the final intervention will be carried out physically, it is necessary to clarify how their needs link to different scale of the neighbourhood. On the city scale, affordability being a main concern of the project, planner has to consider the disadvantaged group's urgent need, which is connection between work and housing. Affordable housing neighbourhood should have the characteristics like mixed use, more housing near jobs, more choices of transport and walkable, compact development. On the neighbourhood scale, public space should promote social interaction, improving safety for children and elderly, and enabling social control. The neighbourhood should have good walking environment and convenient public service and facilities. On the housing scale, while housing for middle income group can contain more quality, housing for low income group should focus on low price or rent.

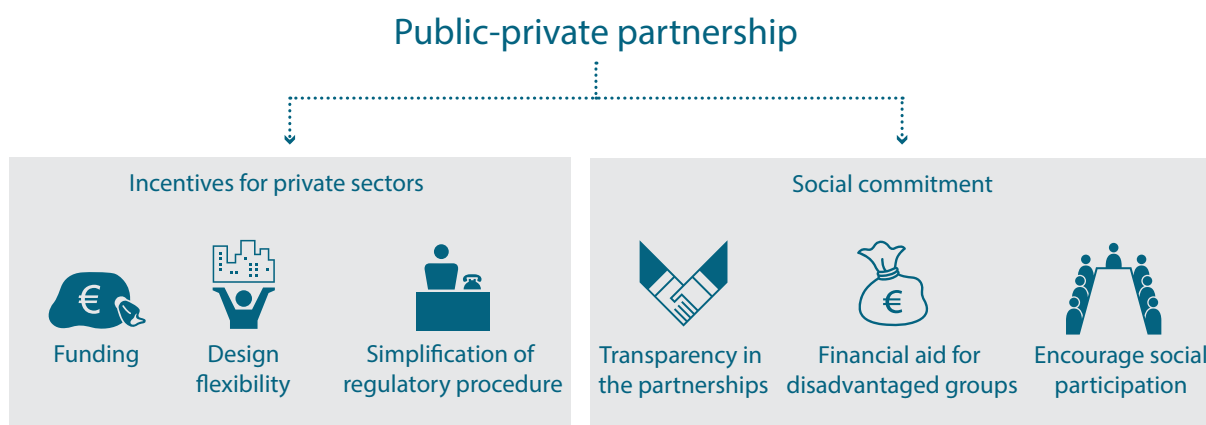
4.3 Institution and management of affordable housing

As is mentioned before, the occurrence of the term 'affordable housing' reflects a changing notion of the operators of affordable housing. Affordable housing becomes a social issue and collective responsibility. Partnership between public and private sectors is not rare in housing provision. Public-private partnership is usually adopted in a government-sponsored scheme which introduce private sector to finance or operate the provision of services to the public or the delivery of social infrastructure assets (Tan, 2012). It bring public and private sector together in long term partnerships for mutual benefits (Akintoye et al., 2008).

Regarding the current practice, there is an increasing tendency that private partners are involved in provision of affordable housing, which is originally considered as a public responsibility. In countries such as US, UK, Malaysia, India, Australia (Abdul-Aziz and Jahn Kassim, 2011), public-private partnership plays an important role in solving urban housing problem. It is a possible solution to a sustainable model for providing affordable housing. The following sections will briefly introduce the key criteria for facilitating affordable housing with public-private partnership. The discussion starts with the argument that housing ethic of the public sector links to the form of public-private partnership. Then it indicates that creating proper incentives for private sector and maintaining the social commitment contribute to successful public-private partnerships in provision of affordable housing.

Housing ethic

'Housing ethics' are organizing principles (or paradigms) that have shaped the whole range of housing issues (from financing, production, and siting to the use of housing) at a variety of levels (Iglesias, 2008). According to Tim (2008), five housing ethics include: (1) housing as an economic good; (2) housing as home; (3) housing as a human right; (4) housing as providing social order; and (5) housing as one land use in a functioning system. The goal of affordable housing is driven by the pluralist housing ethic, which directs policy and social discussion regarding the issue of housing (Davidson and Malloy, 2009). In US, housing is made affordable to people with limited means - generally those making significantly less than the median income for their area (Dolata, 2008). Housing tends to act as commodity and affordable housing in US is a kind of minimum security. The US emergence



Public-private partnership in affordable housing

of public-private partnerships in providing affordable housing began on east coast to cope with financial crises. Compared with US, the Netherlands treat affordable housing in a quite different way that housing is necessity for everybody. Public sector actively intervenes in provision of affordable housing by funding, qualifying private partners and urban planning. Urban housing in China has already been a serious problem not only worrying the lowest income group but also the middle class. The Chinese policy makers definitely need to set the goal of affordable housing as guaranteeing the housing disadvantaged groups.

Incentives for private sectors

The public service or facilities are originally the responsibility of public sector. From the point of view of government, introduction of private partners shows a lot of benefits. However, the private sector needs adequate incentives for them to participate in the partnership, such as privilege in funding, planning and policy. Private profit-oriented organisations search for economic profit or financial aid. Both profit-oriented and non-profit organisations are more inclined to be involved in the partnership with convenient legislation and flexible planning regulation.

Funding is the central issue in partnerships. It is the main driver of profit-oriented organisations and the basis of an affordable housing programme. There are several types of funding or financial aid that public sector can provide for private partners. One of the most common ones is direct subsidy from government. A second possible way is a cross-subsidy approach. In Kolkata, India, it is the integral component of public-private partnerships, which is introduced first as an incentive for private sector companies to invest in housing. The price of low-income housing is prescribed by government while the price of the high income housing can be set at the discretion of the private partners to capture the profit (Sengupta, 2006). Tax and fee discount is also a useful selection. In Queensland, Australia, the community housing organisations with privileged tax status manage affordable housing more cost effectively than either government agencies or the private sector (Susilawati and Armitage, 2004).

Regarding non-profit organisations, such as housing associations in UK and Netherlands, they do not need financial return as an attraction to participate in provision of affordable housing, but they need a sustainable financial basis which supports the provision of proper housing and the maintenance of affordable neighbourhood. Rent, sales and sometimes subsidy from the state consist of their revenue, which supports new construction. In UK, besides bank loans, developing associations are increasingly turning to corporate bonds to raise funds for expansion (Hollander, 2011). Housing associations in NL have a three-layer security scheme to guarantee their loans (Aedes, 2013).

Design flexibility can be a good incentive for private partners. Local government in Queensland, Australia has been involved in affordable housing initiatives by providing relaxation of the planning regulation for affordable housing projects. The developers who gain higher density bonuses because of rezoning have to pay contributions for affordable housing (Susilawati and Armitage, 2004). In Canada, public agencies improve private partners' incentives by permitting design flexibility in terms of, for example, permitted height, density, site configuration and open space, in addition to streamlining the approval process (Griffin, 2003). Public sector can also improve attraction by increasing land supply. Restricted land supply cause high housing price (Peng and Wheaton, 1993). Generally, to guarantee the affordability, government usually prescribes a certain housing price range. However, in the condition of high land price, private developers tend to focus on constructing

high-end housing. High housing price does not lower house output (Peng and Wheaton, 1993), but definitely the amount of affordable housing for low or middle income group would decrease. Government's assistance can greatly improve private incentives to build affordable housing. In India, the State government is tackling the land issue by introducing multiple new town projects in Kolkata. Forty per cent of the total residential land in New Kolkata has been reserved for large scale residential use and the remaining sixty per cent of the land is being released to individuals and cooperatives as an incentive to sectors outside the main public-private partnership (Sengupta, 2006). However, this strategy can only be applied in area where there is huge demand for housing. Besides urban expansion, urban renewal can increase land supply for affordable housing development in highly developed area.

Simplification of regulatory procedure provides incentives to encourage private interest in affordable housing. Being the public sector in public-private partnership, government plays a role as supervision and regulation to ensure building quality. Sometimes it is time-consuming and troublesome for private developers to finish the regulatory process. For example, to develop a property in Kolkata, builders require nearly forty clearances from at least fifteen departments such as sewerage, water, land survey, land revenue, fire and pollution (Sengupta, 2006). Public sector can improve market performance by minimising procedures such as obtaining permit, clearances and registration of property.

Social commitment

In terms of social commitment, public sector should be a moderator (Sengupta, 2006) balancing public and private interest. The public sector is responsible for both economic development and social just. So, in the following discussion, social commitment covers two aspects. First, the task of promoting economy requires a fair environment for partnerships between public sector and private developers. Second, government's burden of social just requires including more participation. While profit-oriented partners concern more about financial return, public sector holds the social commitment to the social vulnerable group.

Public and private partners do not share equal benefits, risk and power. Risk sharing among the government, utility, lenders and developers is often at the heart of most reservations or debate about private sector projects (Akintoye et al., 2008). As a result, transparency in the partnerships is very important to reduce the potential conflict in partnerships, but it is often found to be lacking (Susilawati and Armitage, 2004). Partnerships could be challenged by lack of adherence to the contractual arrangement (Hardcastle and Boothroyd, 2003) and lack of clarification of task. Partnerships without understanding and responsibility arrangement not only threat the success of housing programme but also harm private interest.

Public sector needs to encourage social participation to realise social commitment. Although real estate developers are the most common private players in public-private partnership, they are not the only one. Non-profit organisations, individual households and voluntary organisations are potential partners. Expansion of partnerships and inclusion of the voice of low-income communities in the decision making process of the partnership is important to ensure that partnership arrangements do not lose their social commitment to the vulnerable sections of society (Sengupta, 2006). Partnership can extend further. For example, a growing number of university-community partnerships have

developed in the cities with university. University of Illinois at Chicago played a key role in a citywide affordable housing campaign in Chicago. It provided housing and facilities not only for its staff and students but also inhabitant in nearby neighbourhood (Wiewel et al., 2000).

Lack of financial aid becomes a constraint on home acquisition for certain social groups. Especially in developing country, absence of any mortgage finance facility for potential low income buyers linked to the public-private partnership schemes runs contrary to the partnership's goal of availing affordable housing to those in need (Sengupta, 2006). Not only have those who are struggling with livelihood but also higher income group undergone housing problem. Lower-middle income group, or sandwich class, refers to those who are neither qualified to buy or rent social housing nor can afford private-sector housing because they exceed the income limitation for applying social housing. Their housing problem has provoked widespread discussion among countries or region, where the gap between income, housing price and social housing income limitation is rapidly enlarging, such as mainland China and Hong Kong (Du and Feng, 2010). In 1990s, in order to help sandwich class, Hong Kong Housing Society proposed Sandwich Class Housing Scheme, which provided housing with a price higher than other public housing and lower than private sector housing. It was a short term scheme targeting at a small social group and was suspended as soon as the housing stock changed. In this way, the housing agency could minimise the negative effect to the private sector housing stock (Du and Feng, 2010). Therefore, flexibility is the key principle to solving housing problem for this social minority group.

Conclusions

By reviewing various experience of public-private partnership in provision of affordable housing, one can notice that public-private partnership has different forms. Housing ethic decides the goal of providing affordable housing. As a result, public and private sector develop different forms of partnership, which fit in different social contexts.

The success of public-private partnership relies on some key elements. First, the public sector has to create proper incentives for private partners through subsidy, tax discount, design flexibility and simplified regulatory procedure. However, the feasibility of those strategies depends on local situation and types of organisation. Second, the public sector holds the responsibility for both economic development and social just. Transparency in partnership between public sector and private developers helps to create a better business environment. Public sector needs to encourage social participation to realise social commitment. To accommodate those in need, the public sector should provide proper aid for marginal social groups, such as the low-income and lower-middle income group. Emerging new private partners, like universities, can also become potential power in improving affordability.

5

SOCIO-SPATIAL CONDITIONS

5.1 The contexts of danwei housing

The housing demands of each income group vary. The low income group focuses more on work while the quality of living environment is less important for them. Also, convenient public facilities can greatly improve their housing affordability. On the contrary, the middle income group has high expectation on life quality. They usually live with children and the elderly who more need public space and public facilities. Their different demands on job, transport, public facilities and open space place different requirements on the context of their home. It is necessary to investigate the function, infrastructure, public facilities and open space of the context of danwei housing.

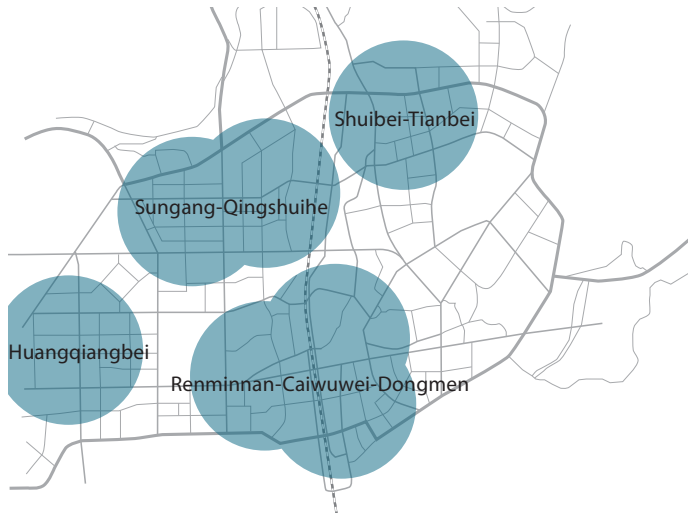
Function

There are several existing functional centres in Luohu district, Renminnan-Caiwuwei-Dongmen commercial centre, Sungang-Qingshuihe logistic centre and Shuibeit-Tianbei jewellery trading centre. Although Huaqiangbei is not inside Luohu district, it has strong relation with Luohu considering the close location. They accumulate most of the economic activities of Luohu district and greatly relates to people's jobs and daily life.

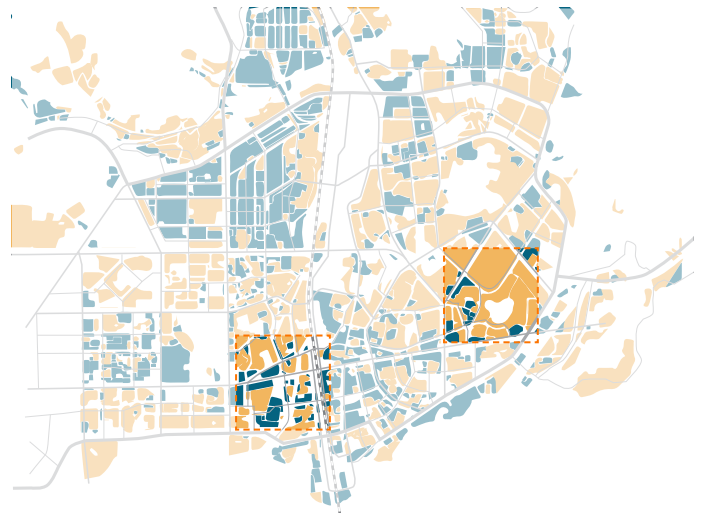
Centrality is one of the key influential features of context. Centres have a complete composition of functions and are more accessible. Therefore, centres can accumulate flows of people, goods and capitals and can provide more job opportunities, which is low income group's main concern. From the data of housing rental websites, there are much more single rental rooms, which mainly target at migrants, in central area. Market always reacts to actual demand quickly. So, central area has already been a popular home choice for migrants and it has that potential. What's more, the spatial structure of central and peripheral area varies. In central area, small residential area mixes with commerce and office. In peripheral area, where commercial nodes scatter, residential area adjoins each other. Spatial structure, where a neighbourhood is based, shapes the living environment of neighbourhood.

Legend

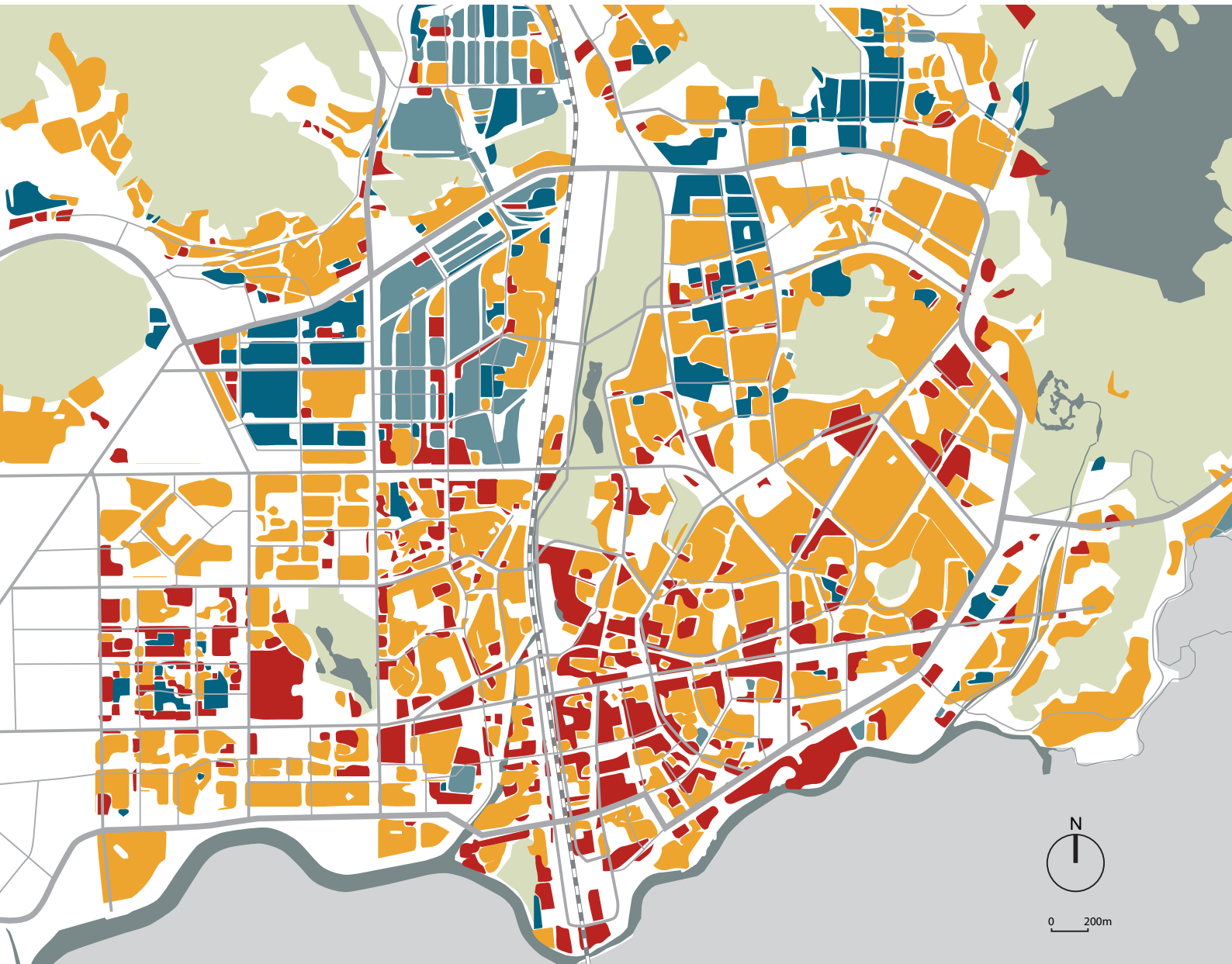
	Water
	Green
	Residence
	Industry
	Storage
	Commerce
	Regional road
	Main road
	Local road



Centres



Two types of spatial structure



Functions









Infrastructure

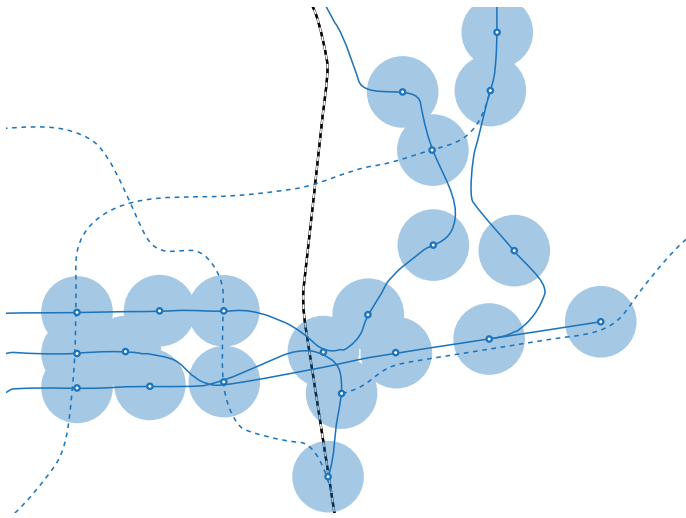
Metro has been developed for ten years in Shenzhen. Four lines have been completed. More metro lines have been planned or are under construction. Metro stations are all over Luohu district. However, metro stations are usually denser in centres. Peripheral area more relies on bus and car, which makes low income group less willing to live in peripheral neighbourhoods.

Road density varies in different location. Road is denser in or near centres while road is less dense in peripheral area. In order to reduce passing, most of the road inside neighbourhood is designed as dead-end. It is quite common that several neighbourhoods adjoined to each other and are divided by wall without inner connection in-between. In peripheral area, the road network is less dense so that it is less accessible.

Infrastructure has impact on accessibility of danwei housing neighbourhoods. Low income group is more sensitive about public transport and they prefer housing with convenient public transport.

Legend

-  Water
-  Green
-  Regional road
-  Main road
-  Local road
-  Metro line
-  Proposed metro line
-  Metro station



Unbalanced distribution of metro station



Two types of road structure









Infrastructure

Open space and public facilities

Large area of green is preserved at the periphery of Luohu District. There are several big public parks but not much small communal scale open space. There are some unused green spaces which can be potentially transformed as recreational use.

Many neighbourhoods, including danwei housing and commodity housing, have their own small scale open space, which is only for residents. Large scale open space, which can contain much more recreational functions, can be an attraction for middle-income group. Danwei housing neighbourhoods near large open space have potential to transform to middle-income housing.

Legend

-  Water
-  Green
-  Open space
-  Regional road
-  Main road
-  Local road



Lack of small community open space



Preserved green space as potential place for recreation









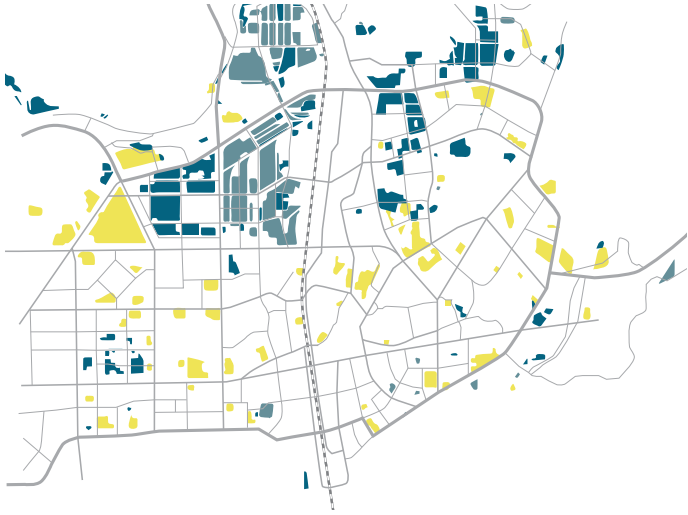
Open space

Public facilities

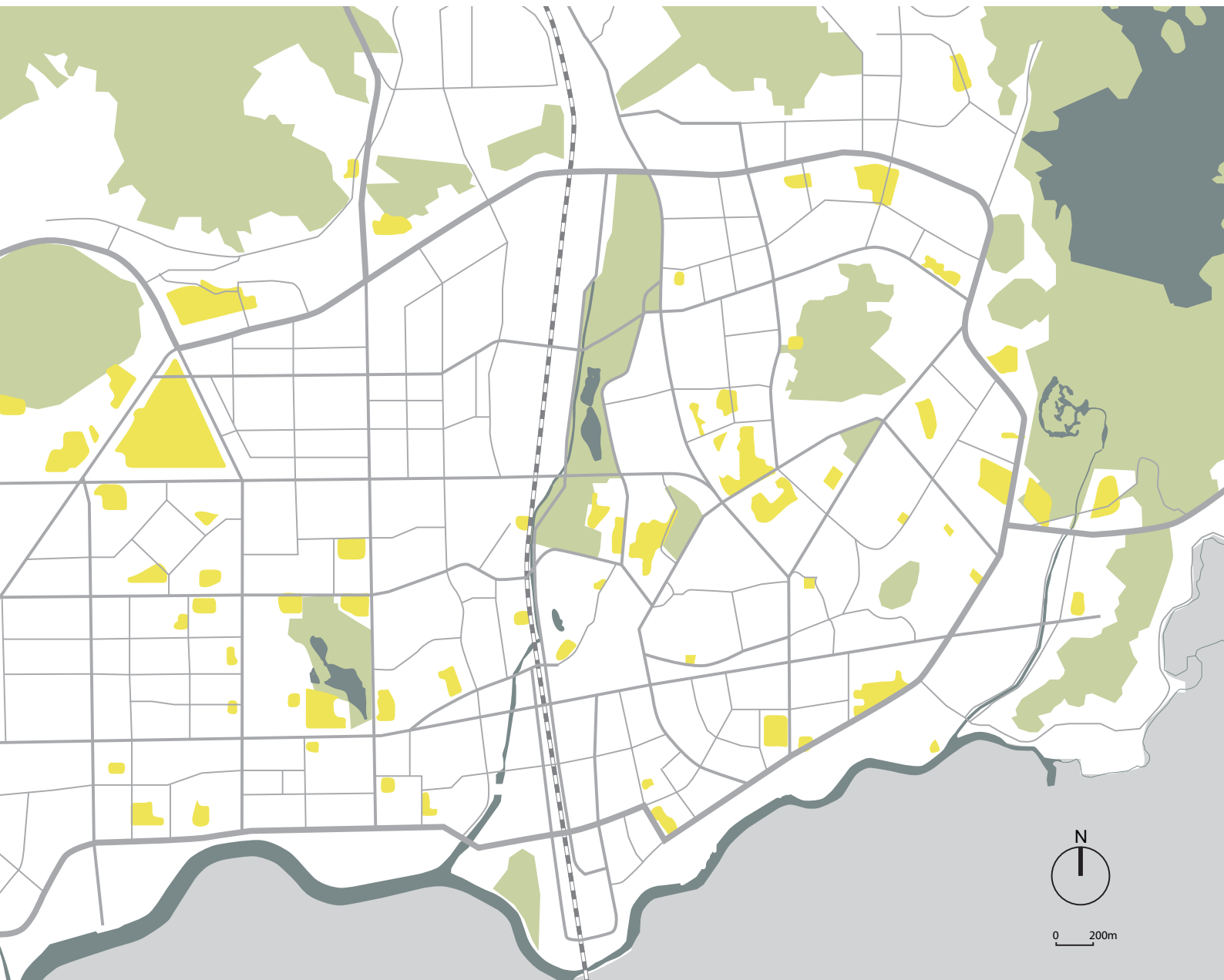
Public facilities (school, hospital, sport centre, etc.) are evenly spread in Luohu except the industrial and warehouse zones (Sungang-Qingshuihe). Those industrial and warehouse zones will be upgraded into multi-functional area including residence and commerce which will request for more public facilities in the future. Public facilities are important for both low and middle income families. Low-income group prefers public facilities close to housing. Middle-income group is concerned with complete public facilities in neighbourhood such as school for children and healthcare for the elderly.

Legend

	Water
	Green
	Danwei housing
	Regional road
	Main road
	Local road



Convenient public facilities in Luohu except in Sungang-Qingshuihe, an industrial zone



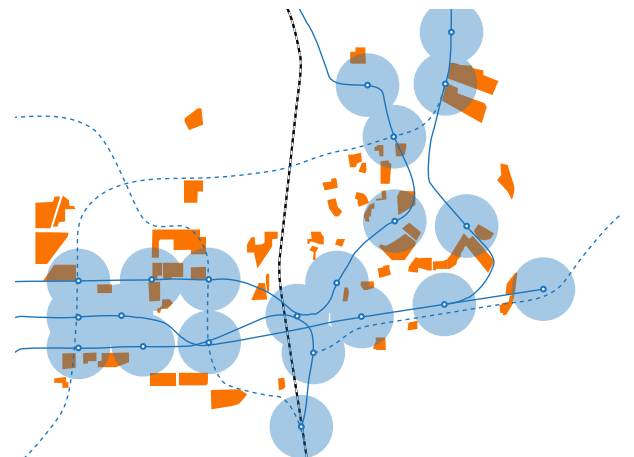
Public facilities

Criteria

Context reveals the affordability and liveability of a certain area where a danwei housing neighbourhood is located. It indicates the potential as well as weakness. In terms of affordability and liveability, some criteria can help us to understand the context of a particular danwei housing neighbourhood in Luohu. First, centrality and the spatial structure of neighbourhood decide the composition and the distribution of functions, which relates to job opportunities and the quality of living environment. Second, public transport and road shape the connection between home and work. Also, the accessibility on neighbourhood scale influences the quality of living environment. Third, open space near housing can be an attraction for middle-income group. Fourth, public facilities near housing can improve low-income group's affordability and complete public facility is middle-income group's main concern.



Centres



Unbalanced distribution of metro station



Lack of small communal open space



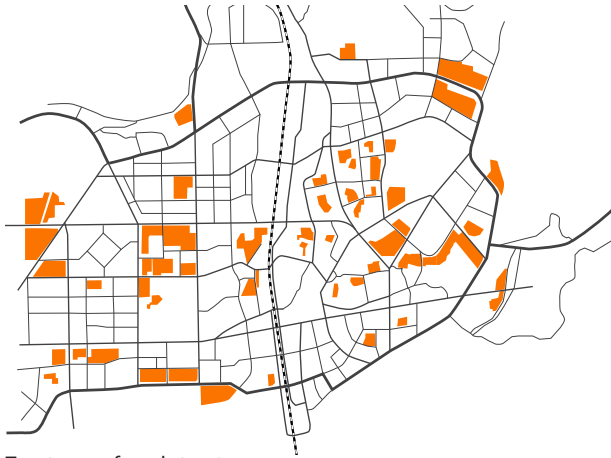
Lack of public facilities in industrial and warehouse zones



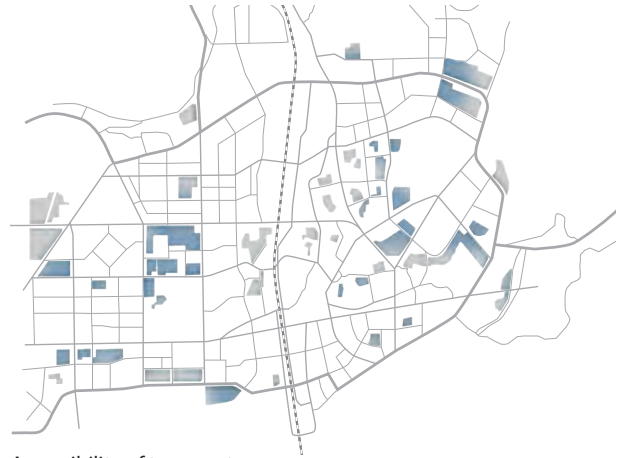
Two types of spatial structure



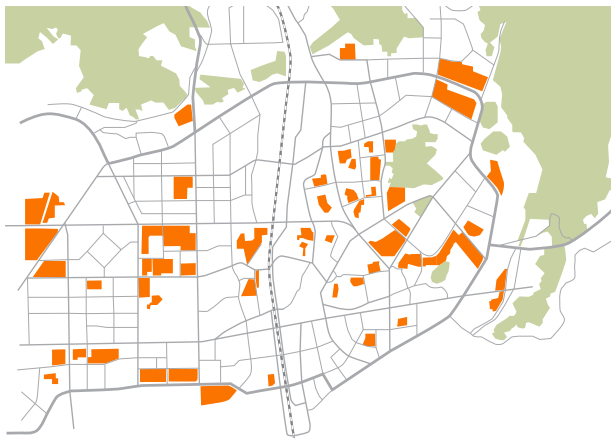
Centrality



Two types of road structure



Accessibility of transport



Preserved green space as potential place for recreation



Accessibility of open space



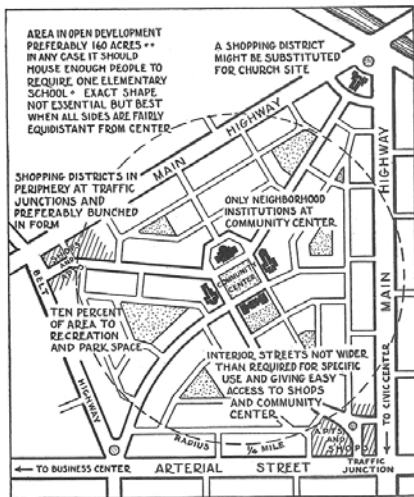
Convenience of public facilities

5.2 Spatial layout and programme (Neighbourhood scale)

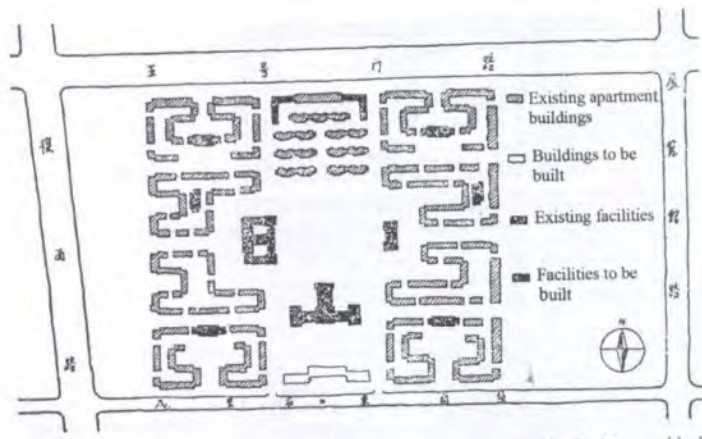
This section aims to make a conclusion of the general spatial layout of former public housing. There are many former public housing neighbourhoods in Luohu District and it is impossible to observe all of them. The detailed observation has been done for five of the neighbourhoods or area. The selection is made according to their difference in location and size in order to increase the diversity of sample. Danwei housing neighbourhoods in Luohu have similar spatial layout. One reason lies in the influence of the model of neighbourhood unit. In the early 20th century, functionalism rose as a solution to the unliveable industrial cities. Under this background, Clarence Perry's concept of neighbourhood unit emerged as a framework for planner to design functional, self-contained and desirable neighbourhoods. The core principles of Perry's Neighbourhood Unit were organised around several physical design ideals (Perry, 1998). First, centre the school in the neighbourhood and size the neighbourhood to sufficiently support a school, between 5,000 to 9,000 residents. Second, place arterial streets along the perimeter to define the neighbourhood. Third, design internal streets using a hierarchy that discourage unwanted through traffic and enhance the safety of pedestrians. Fourth, restrict local shopping areas to the, thus excluding nonlocal traffic that might intrude on the neighbourhood. Fifth, dedicate at least 10 percent of the neighbourhood land area to parks and open space, creating places for play and community interaction. Soviet Union developed the concept of neighbourhood unit and influenced the practice of neighbourhood planning in China (Zhao and Kai, 2009). Another reason is the socialist concept of equality. Because of financial shortage and rapidly growing housing demand, housing construction emphasized quantity and efficiency. This means that the cost should be low and design has to be standardized. Socialism eliminates private property which generates diversity. Housing demands were perceived as being homogeneous and consequently, planning and design of the neighbourhoods resemble each other.

The spatial layout of danwei housing neighbourhood reflects the concept of neighbourhood unit and responds to the socialist ideology. Based on this perception, the analysis of spatial layout consists of four aspects: dayuan, connection, morphology and building and housing typology. First, dayuan, which is the territory of the mono-functional neighbourhood unit, separates the residential area and other functions in order to create a quiet living environment. Second, the unit is defined by arterial road along the perimeter and no internal passing driveways in the unit contribute to a safe environment. Third, the emphasis on efficiency, equity and living quality results in orderly building morphology and the characteristic public space in danwei housing. Fourth, the design of housing typology also strictly follows the principle of high efficiency and good living environment quality.

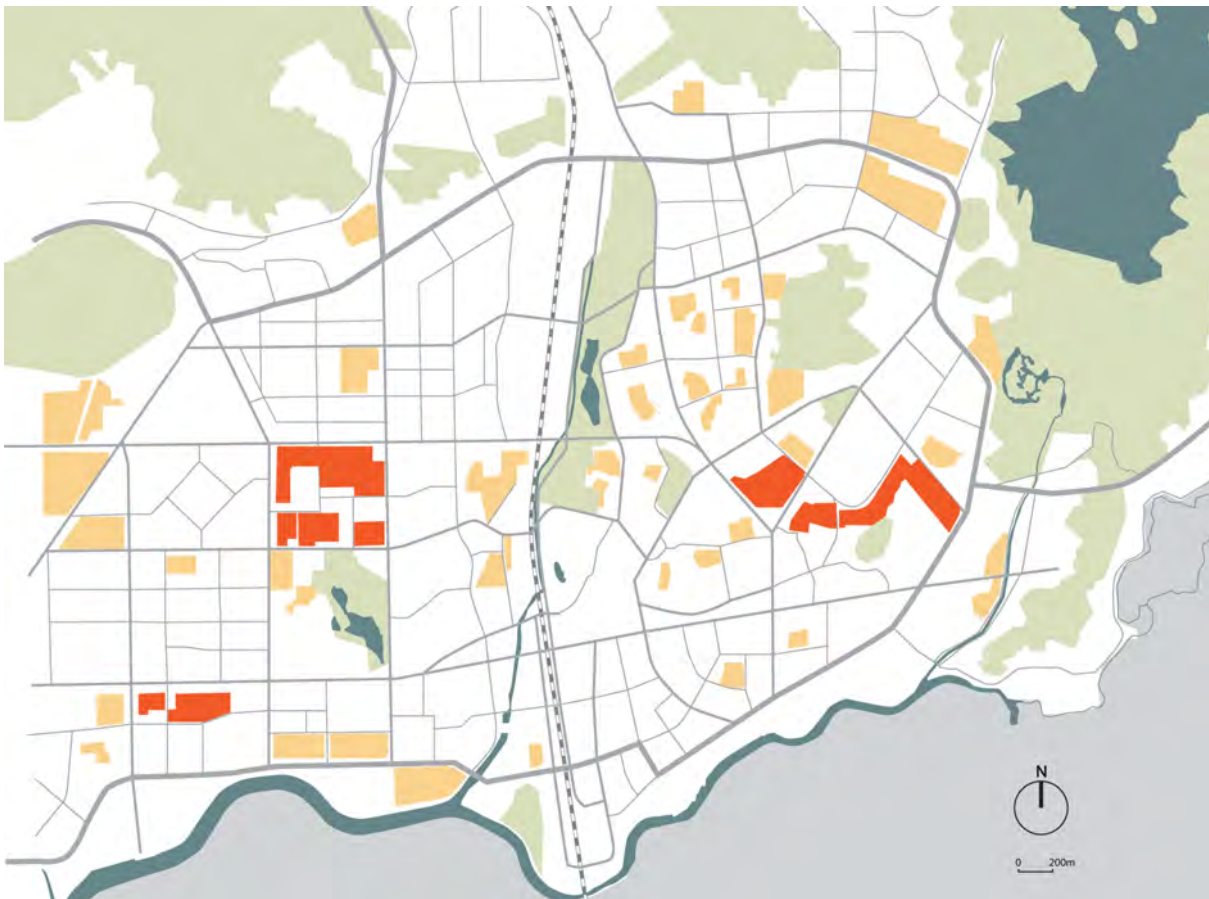
The current situation and data of the five samples are presented as appendix.



A diagram of Clarence Perry's neighbourhood unit (Source: New York Regional Survey, Volume 7)



A danwei housing neighbourhood in China influenced by Soviet Union (Source: dyl703.wordpress.com)



Location of observation samples

Dayuan (Courtyard)

Spatial structure of the city can be clarified into three levels: city, dayuan (courtyard) and housing. City is the urban environment outside dayuan. Dayuan, or courtyard, is the territory of the neighbourhood. Housing is the private space for household. The city level is the most public while housing level is absolutely private.

Danwei housing neighbourhoods are mono-functional except that some big neighbourhoods have supplementary functions like small stores and schools.

Unlike the typical gated community, a dayuan has wall but is not always gated. The definition of the boundary reduces passer-by and enables inhabitants to effectively control the neighbourhood (van Dorst, 2012) and consequently improves safety. While a close spatial structure like dayuan contributes to a safe community, commerce prefers an open structure. The boundary conditions of dayuan vary. Shopping area is designed along main streets. Because of the planning regulation, the buildings have to step back from the street for a certain distance. Such step-back enlarges the public space and enables the street to contain more social interaction and commercial activity. The step-back area on the same street usually belongs to different owners, so sometimes the walking environment does not have inconsistent design which decreases quality of walking environment. At the boundary along secondary streets, wall and fence prevent the neighbourhood from the disturbance of passing. However, as the city develops, some secondary streets attract more and more passing. People set up small business and wall sometimes becomes barrier.

Size of the neighbourhood matters. In the atlas above, neighbourhoods of different size are included. Stores and service are more accessible to neighbourhoods of small size but the neighbourhood of large size are not because of the long walking distance from edge to the centre of neighbourhood. Therefore, the large neighbourhoods show greater need for services or shops nearby. In the case of Huali, a shopping street, which is established by the inhabitants gradually, has already emerged. The emergence of shopping street changes the atmosphere of the main street. A crowded environment which is full of passer-by may not suitable for residential area. Also, passing is much more common in large neighbourhood. On the other hands, street network is usually denser near small neighbourhoods so passing is seldom the case.



A shopping street emerges with passing.



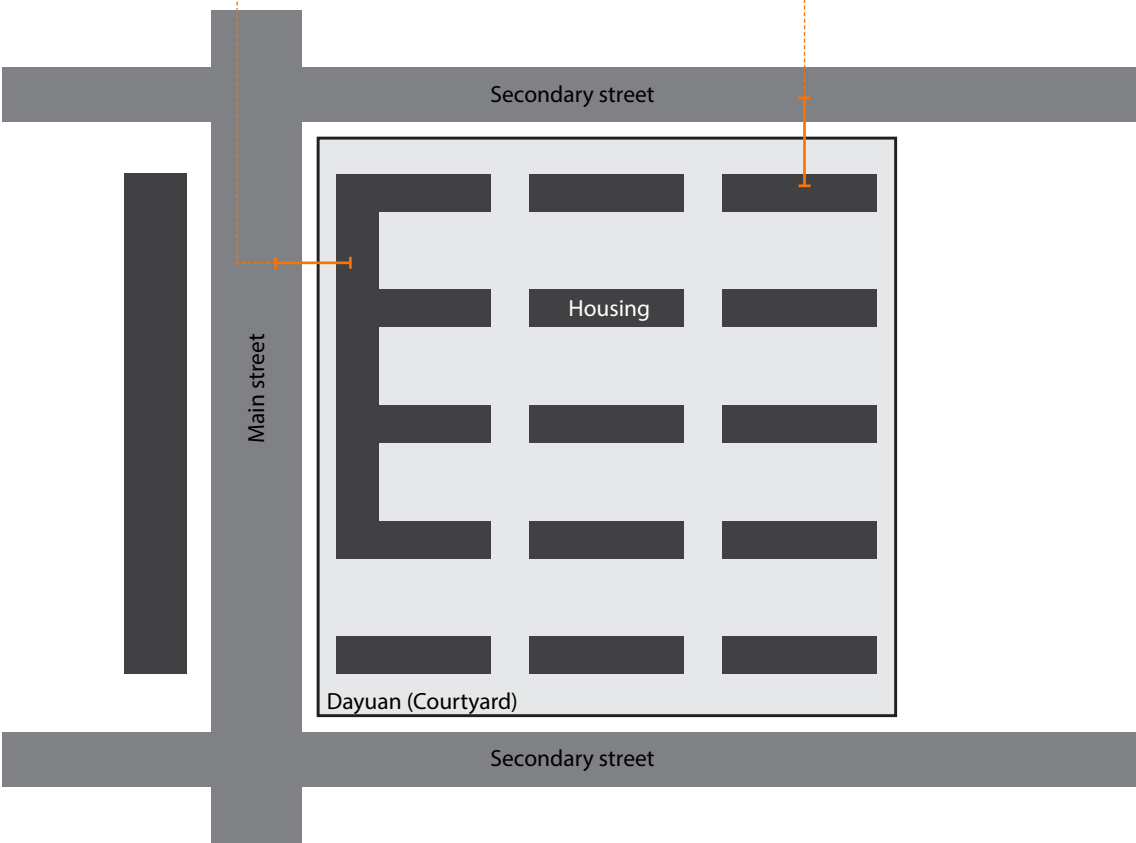
Less passing inside dayuan



Step-back area enables the street to contain more social interaction and commercial activity



Sometimes, wall sometimes becomes barrier.



Spatial structure of three levels: city, dayuan (courtyard) and housing

Connection

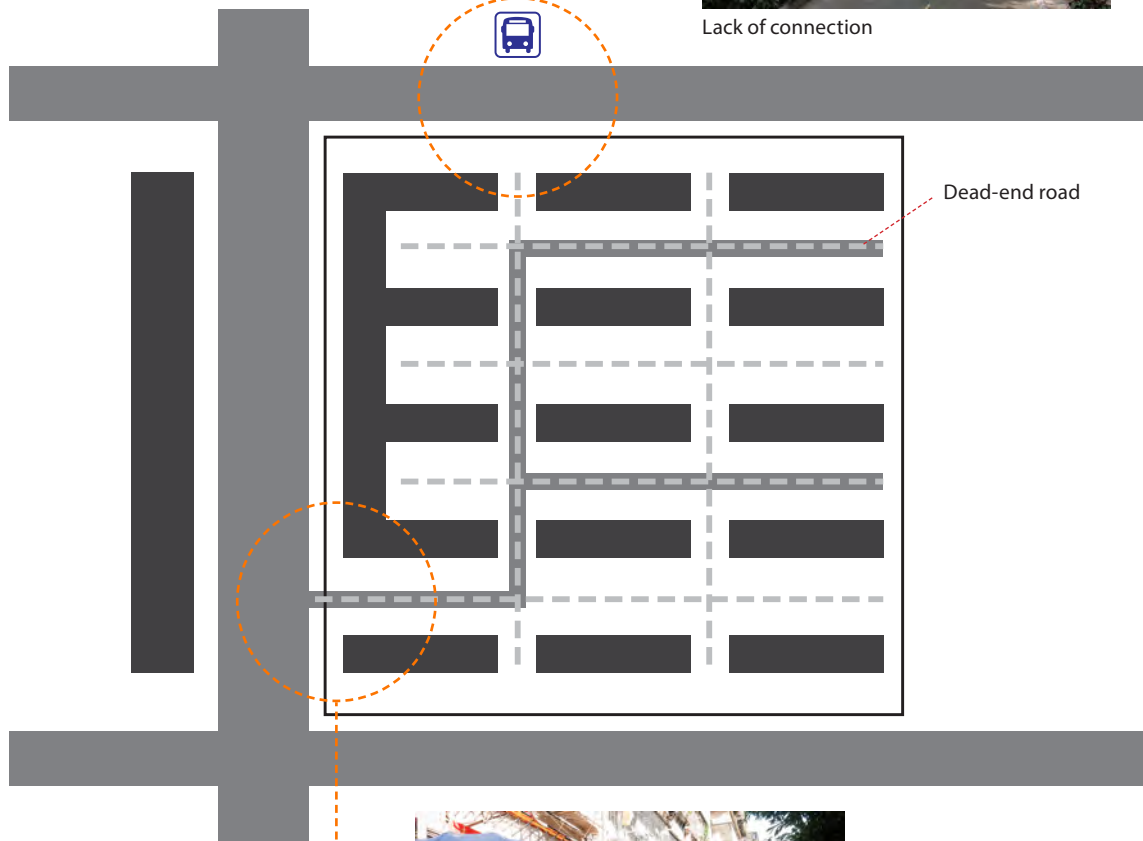
In most of the neighbourhood, road is usually dead-end and tortuous. Dead-end road can reduce car flow and thus improve safety for pedestrian. Pedestrian routines and entrances are designed in different way. Considering the scale of the neighbourhood and urban block, walking should be placed as the priority concern for a simple reason that one's walking circle is much smaller than a car circle. Walking path is usually organized in network to increase accessibility in the former public neighbourhood. However, entrance for pedestrian is not always enough. In Huali, a gate between two adjacent neighbourhoods was built because there was a need for a connection. Jingbeinan only have two gates for both car and pedestrian at west side but no gate at the east side where new development may indicate a need for connection in the near future. The problem of lack of pedestrian gate usually exists in big neighbourhood.

Some neighbourhoods (Yuanling) are absolutely car-free. These neighbourhoods have concentrated parking lot nearby. Some neighbourhoods control car flows by road hierarchy, for example, Mutoulong, Jingbeinan, Nanyuan. Main streets inside the neighbourhood allow both pedestrian and cars. Streets outside the buildings are only for pedestrian. Cars are usually parked on or near main streets. Some neighbourhoods, such as Huali, have no distinction between pedestrian and vehicle, which threatens pedestrian's safety.

In most of the neighbourhoods, space for local business is not considered in the original design. Sellers occupy part of the street. Sometimes, this leads to congestion. Certainly, commercial vitality is important for affordability and liveability. It can provide job opportunities. Besides, convenient services and shops contribute to the formation of an affordable and liveable community. The occurrence of shopping street relies on slow traffic. If it does show a need of adding a connection, the car flow should be limited by means of road hierarchy.



Lack of connection

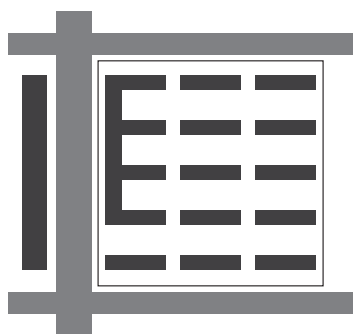


Dead-end road



Connection evolves commercial activity and social interaction.

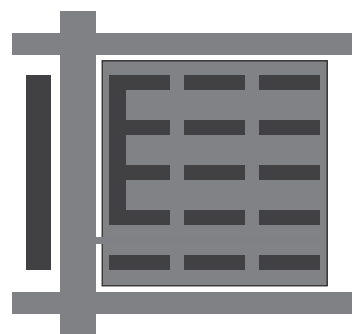
--- Pedestrian
 — Car



Car-free



Partly car-free



Absolute mix

Morphology

At the early stage of urban development, there was great demand on housing. Also, the socialist idea of absolute equity still dominated. In consideration of sunlight and ventilation, buildings usually face south. The emphasis on efficiency, equity and living quality results in the orderly building morphology in danwei housing.

In the danwei housing neighbourhood, buildings are usually placed following a regular pattern. After connecting each building with an as well regular road network, green is filled in the void between buildings and road without differentiation and clear definition of the territory. Some neighbourhoods even do not have any green. The borders between the public/private/semi-private spaces are blurred. There is not much usage in such confused space.

The confused space evokes a lot of transformation. Transformation of public space by the inhabitant takes place in various ways. Some residents living on lower floors complain about the trees that block the sunlight. Some residents even removed the plants shading their home. Some people living on ground floor occupy the public green and transform it into private gardens or stores. As the work unit retrieved from the danwei housing neighbourhood, the lack of effective management of the neighbourhood causes the degradation of public space. The privatization of public green does reduce the available public space for others. However, such privatization prevents degradation to some extent. In Yuanling neighbourhood, ground floor private gardens even became kind of positive identity of the neighbourhood.

The outdated design of neighbourhood failed to estimate the rocketing car ownership in city. All the neighbourhoods suffer from serious shortage in parking place. Uncontrolled parking along the street creates traffic congestion. Some public green is transformed to parking place, which threatens the environment quality of danwei housing neighbourhood.

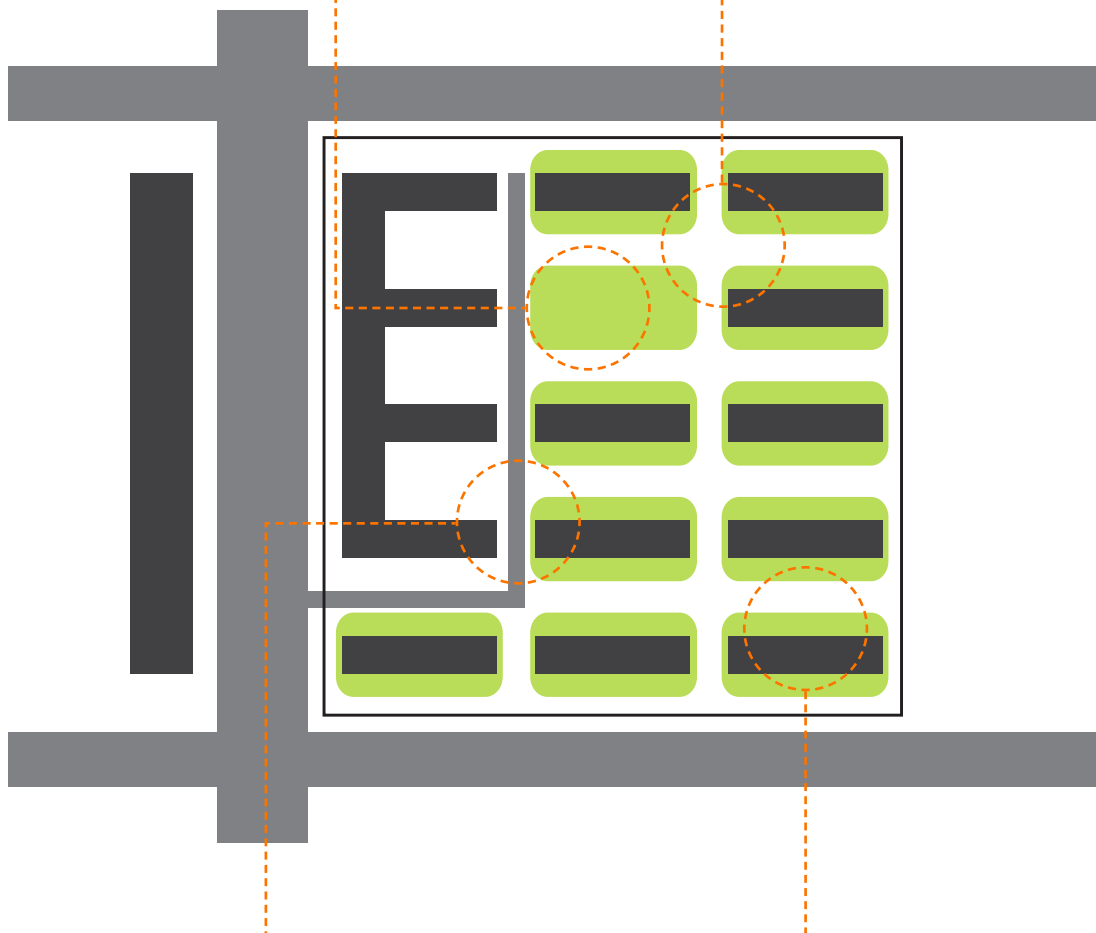
Observation also indicates a lack of facilities in public space. Playgrounds, parks or gardens are only discovered in several neighbourhoods. Facilities are not enough especially in small and central neighbourhoods because of lack of space. The elderly and children consist of the main users of playgrounds and facilities because they have more spare time. Despite the insufficient facilities, activities are quite common in certain time. Some old people dance at a little piece of land in the afternoon. Children play football after school. The design of public space has to focus on their need.



The elderly



Privatization of public space



Parking



Confused space

Building typology

Since the architectural design is standardized, the residential buildings are similar. A typical residential building is six to seven storeys. Each stair serves two apartments which is 70-90m² with two to four rooms. Clearly, such design targets at families of three to four. Buildings strictly face north-south direction. The ground floor shows more functional diversity such as parking or small stores besides apartment. Because of the retrieve of work unit, the lack of maintenance results in deterioration of shared space, such as the facade, pipes, roof, etc.

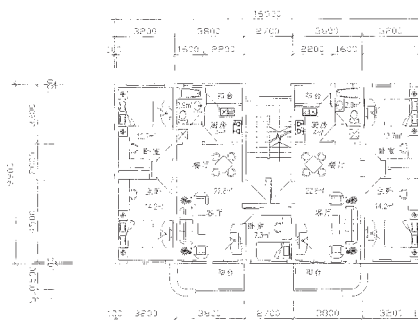
Informal transformation is quiet common. On ground floor, apartments near the street where there is commercial potential are sometimes transformed into shops. Such self-transformation can have great impact on the living environment. Stores tend to concentrate and thus a shopping street can easily form. The accumulation of stores increase car and pedestrian flows. This will have both positive and negative impact on the neighbourhood. On the one hand, economic vitality and convenience for inhabitants increase. On the other hand, crowd and cars may ruin the traffic safety and weaken inhabitants' control over the neighbourhood. Also, transformations like adding extra rooms are not rare. These may harm the structure of the building or reduce available public space. Informal transformation indicates a desire for diversity of building typology, but unorganized transformation driven by individual interest would probably make the living environment deteriorate.

Along the main street, there are usually commercial podiums with housing on top. They are multi-functional and contain not only commerce and residence but sometimes even communal service. Podium buildings act as the functional centre of the neighbourhood. This type of building can include much more functions than residential building.

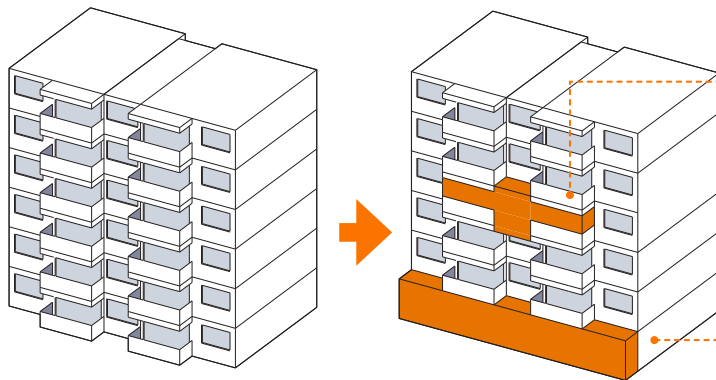
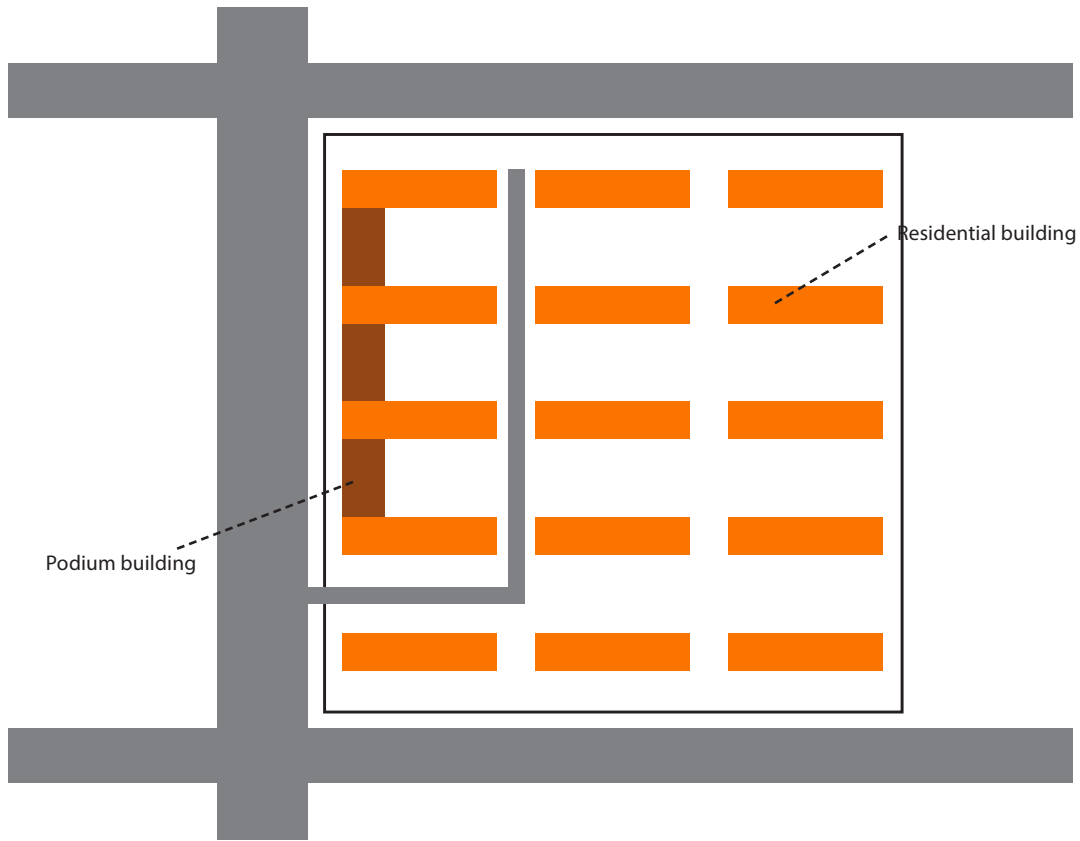
Diversity of inhabitant is increasing. In one of the dayuan of Huali, rental housing consists of 60% of the total number of apartment (approximate 600 apartments). Among these tenants, some of them come from inland countryside working as low-skilled workers. Some are young professions who have higher salary. The others are young couples with young children. Some middle income family, most of whom are the owners, still stay in the neighbourhood. The housing was designed for family so it cannot well suit the single household. Especially in some neighbourhood near centres, apartments are divided into several rental single rooms. In the neighbourhood with high percentage of rental housing, low percentage of owner occupancy is the reason of unwillingness to maintain the neighbourhood. Difference of age, social stratum and hometown (In such a big country like China, there is great cultural difference between people from different places) sometimes lead to conflict. The mobility of the tenants also results in anonymity and reduces safety.



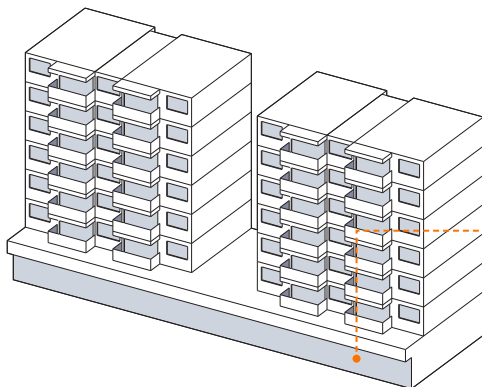
Deterioration (Source: bbs.szhome.com)



A typical floor plan: two apartments of 80-90m²



Informal transformation in residential building



Podium building



5.3 Conclusion

The concept of neighbourhood unit focuses on division of function and separation of residence and transport. It organizes housing, road, green and facilities in a clear and orderly spatial structure. The concept of neighbourhood unit is still worth discussing. But the absence of consideration on human scale in danwei housing makes it not adaptive to the time of transformation (the rise of market economy and private property). The conclusions of advantages and disadvantages are clarified as general conclusion, which is applicable for all danwei housing neighbourhoods, and specific conclusion, which is applicable in certain case.

Dayuan

General conclusion

- Danwei housing neighbourhoods are shaped by a three-level spatial structure. It defines boundary and enables inhabitants' effective control over the neighbourhood.

Specific conclusion

- Boundary conditions depend on the surrounding condition. Step-back area along main streets sometimes is discontinued. Sometimes wall and fence becomes barrier for commercial activity.
- Passing and shopping street emerge in some big neighbourhood. The emergence of shopping street increase anonymity and change the atmosphere of the neighbourhood.

Connection

General conclusion

- Dead-end road in the neighbourhood helps to reduce passing.
- Local business lacks space. Connection evokes commercial activity and social interaction.

Specific conclusion

- Separation or mix of pedestrian and vehicle both exist.
- There may be not enough gates for pedestrian especially in big neighbourhoods. May need to strengthen connection between public transport, working place and home.

Morphology

General conclusion

- Standardized design results in homogenized and confused space.
- There is serious shortage in parking lot and contradiction between parking and public space.
- Privatization of public space weakens deterioration to some extent.
- The main users of the public space are the elderly and children.

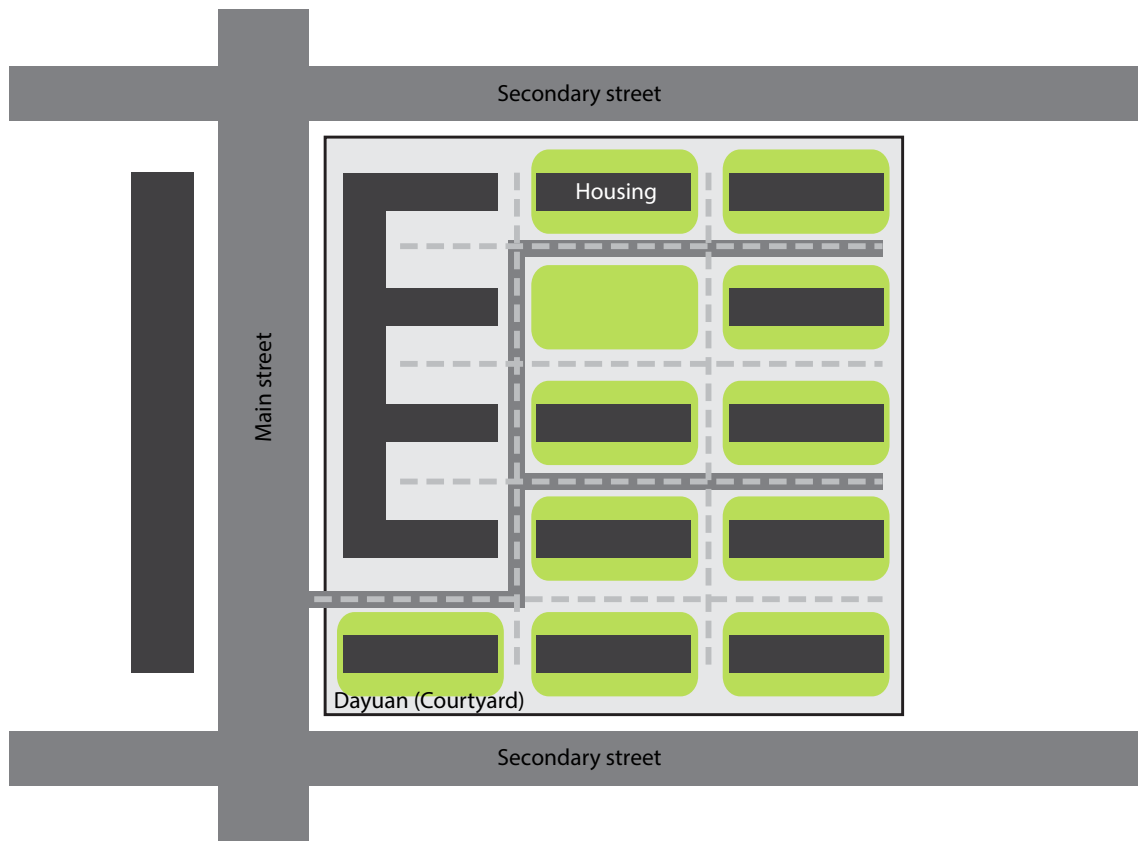
Specific conclusion

- There are not enough facilities or public space in some neighbourhoods.

Building typology

General conclusion

- Buildings lack of proper maintenance.
- Standardized architectural design lacks of housing typology diversity. There is a desire for diversity of typology.
- Unorganized transformation may aggravate housing deterioration.
- Ground floor contains a variety of functions. Podium building acts as the functional centre of the neighbourhood.
- Mixed social condition indicates diversity of demand and more conflict. Mobility of residents may reduce safety.



Layout model of danwei housing

6

INSTITUTIONAL CONDITIONS

6.1 Historic review of Shenzhen housing reform

Before the adoption of open door policy, urban housing mainly consists of public housing, which is the welfare provided by the state to the employees of state-owned enterprise and government. So, it is absolutely affordable. National-wide housing reform radically changed the housing ethic and shaped the current urban housing stock. Recently, the state proposed policy concerning affordable housing for disadvantaged group. Before investigating current situation of housing policy, it is necessary to start with the very beginning of housing reform. Though housing reform is national-wide, local government can modify the policy according to local conditions. The attention will be paid more on the local practice in Shenzhen.

1981-1987: Early practice in Shekou

When SEZ was just established, people flooded into the new-born city. It is urgent to house the great number of new comers (engineers, workers, etc.). The early practice to solve urban housing shortage was carried out by work unit in Shekou, which is one of the earliest industrial zones in Shenzhen.

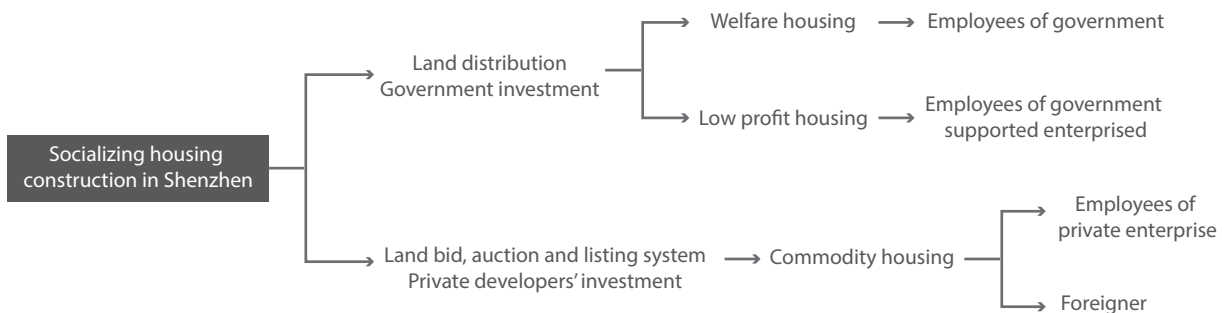
Despite the large supply of housing, shortage still existed. It was attributed to the socialist idea of absolute equality. Price or rent is extremely low and everybody could live in housing with the same quality. Individual demand was not restricted by their economic ability so housing demand expanded without limitation. Work units could not receive enough returns from sale or lease to support further housing construction. Therefore, work units sought solutions. The strategy was to increase returns by increasing rent and selling with cost price. Work units encouraged employees to purchase by providing subsidy. They also introduce property management. In the past time, work units were responsible for managing the neighbourhood as well.

These solutions reflect a conceptual switch from housing as welfare to housing as commodity, though public sector still acted as the only developer. Work units in Shekou successfully increased revenue and accelerated new housing construction in this way so the authorities believed that commercialization could be a solution. However, such concept was operated on a small scale practice, which might not be as successful in city-wide context.

1988-1998: Beginning of housing reform

SEZ Housing System Reform Scheme announced in 1988 was a starting point of a city-wide integrated approach to tackle housing shortage in Shenzhen. In this period, the guiding concept was socializing public housing distribution and commercialization of housing. The government established Shenzhen Housing Agency, a public agency responsible for building and distributing public housing. The Housing Agency replaced work units as the house provider. Facing the serious shortage, the state also allowed private housing development.

There were some beneficial factors that drove the authorities to undertake the Scheme. Having been developed for several years since the start of Open Door Policy, the economy of Shenzhen had made progress. People were willing to pay more for housing because of higher monetary income and conceptual influence from Hong Kong. At the same time, there were disadvantages. High housing area per capita, which resulted from previous housing policy, made it hard to satisfy the housing demand. People always liked to compare their property. Floating population (the people without



Housing reform 1988-1998

hukou) became a significant phenomenon. They intensified the tension of housing shortage.

The Scheme succeeded the idea of early housing reform practice in Shekou. It put forward a long term vision to commercialize housing step by step. First, public sector provides sub-cost non-profit commodity housing without including land price. Second, raise the price to cost. At this stage, housing is still non-profit. Finally, raise the price beyond the cost so that housing agency can realize a sustainable financial cycle: revenue, new construction and then, more revenue.

The Scheme tried to rearrange the interest of the stakeholders including the state, work units and individual. It was necessary to clarify the responsibility and profit among the state and work unit because the actor of housing construction had changed. To reverse the socialist idea of absolute equity, housing standard needed to differentiate according to individual economic affordability.

The Scheme proposed an affordable housing system including low-profit housing and welfare housing which respectively targeted at employees from government-supported enterprise and government. In order to increase revenue, it related housing price with the proportion of ownership besides raising the housing price to cost. Government established a housing fund to support the construction of public sector housing. Housing distribution was socialized. Housing agency was responsible for construction and distribution. Qualified households could apply for housing from the housing agency.

The reform in this period was not perfect. Although the Scheme successfully solved financial problem in public housing system, the reformed system failed to cover the housing demand of people working in private sector. The public housing was mainly constructed for government and state-owned enterprise employees. Most private enterprise employees were excluded from the system. Inequality between people from public sector and private sector aroused discontent. Housing distribution needed further socialization. Moreover, private sector housing was suppressed because many public sector employees who were able to afford commodity housing could obtain cheap public housing easily.

1998-2001: Further reform

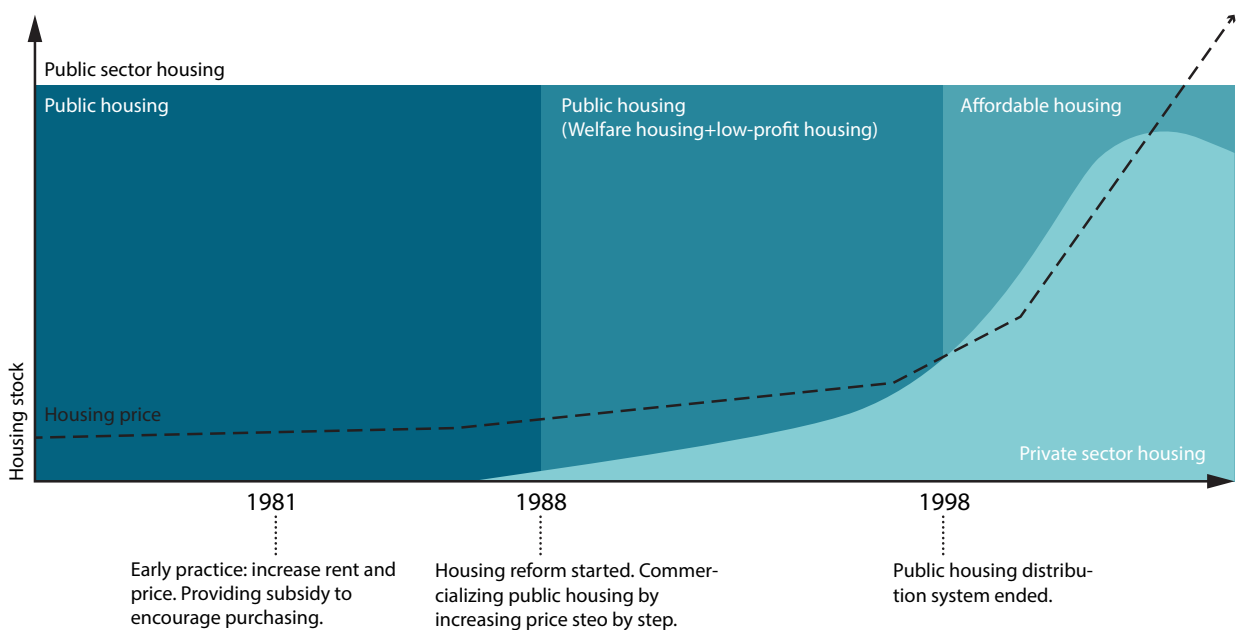
Public housing system was seen as a barrier for the development of private sector housing stock. The state also believed that private sector housing stock could be stimulation to economy. The radical reform started. Public housing distribution system which had lasted for 50 years came to an

end. People were encouraged to search for their homes in the market and the state commercialized existing public housing. Instead of providing housing to those who could afford commodity housing, further reform aimed to establish affordable housing system for people in need. Measures included qualification for affordable housing application and introduction of partial ownership. Owners of affordable housing could not sell or lease the property in ten years after purchase.

However, the qualification system did not work well. It was unable to identify target group by income. High income recipients could also apply. Compared to commodity housing, the affordable housing was too cheap and good, so high income recipients did not shift to private sector housing market. People without hukou were still excluded from the application system of affordable housing.

2002-Now: Improving affordable housing system

In consideration of the failure of previous reform, housing policy in this period is to set up a housing stock which covers every stratum. According to the plan of the state, commodity housing, affordable housing and public rental housing are for the high, middle and low income groups respectively. The construction of low-profit housing and welfare housing ceased because public housing system suppressed the development of commodity housing stock and disadvantaged group could not benefit from that. As a replacement, a new affordable housing system for low-income household was announced. More private investment and developers participate in construction. Construction of large quantity of housing was proposed. Shenzhen government planned to accomplish 210000 affordable housing units during the period 2011-2015. However, only 58000 units have been finished by now (Chen, 2014). It is not surprise that such large scale new construction can hardly be accomplished under the pressure of land shortage. There are more problems in built affordable



History of housing reform

housing. Many affordable housing projects are located at the urban fringe where infrastructure still needs improving and there are not many job opportunities. High cost on commute can make the housing 'unaffordable' instead. As housing reform develops, housing in China is not only a kind of necessity but also an engine of economic growth. When the public housing system came to an end, private sector housing stock flourishes and stimulates speculation. These have greatly increased local governments' revenue. Local governments focus on economic growth and only attend to meet the number assigned by central government without emphasis on quality of affordable housing.

Conclusion

During 30 years of housing reform, some attempts were worth mentioned. The reform broke the socialist idea of absolute equity so that the society could organize limited resources effectively. It confirmed the efficiency and power of market. Policy makers proposed a long term vision to socialise provision of housing step-by-step. However, a series of reason and problem, such as perspective of economic prosperity and inequity in housing distribution, led to a more radical reform. This radical reform did successfully boom the economy, but the cost was lack of affordability for disadvantaged group.

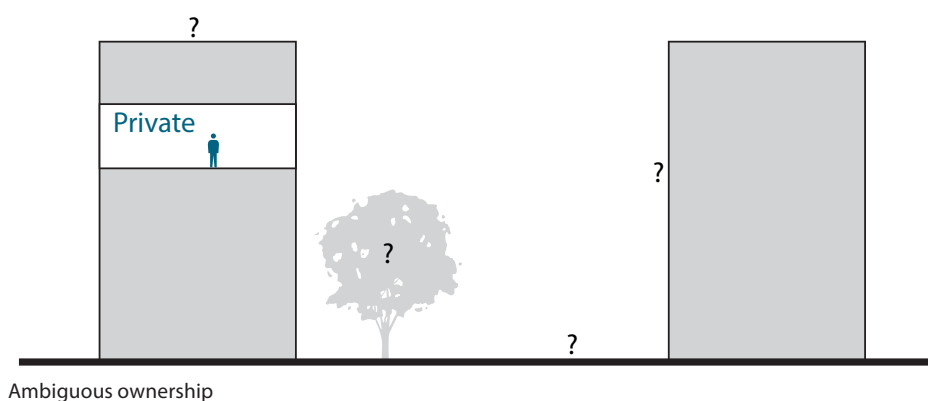
Moreover, such economic development based on land sale and housing speculation is not sustainable. As mentioned before, improving disadvantaged group's affordability can contribute to economic prosperity. Affordable housing can be the new stimulation for economic growth while it is also the social commitment of the whole society.

In China, urban housing was the state's responsibility before. Housing reform can be seen as the socialistic state's experiment which tackles the urban housing problem by involving private sector. Housing reform does have created enough incentive for private sector but pay less attention to social commitment. Over-marketization of housing stock harms the interest of those who are unable to get decent housing in free market. To balance affordability and economic prosperity, public sector's intervention in housing stock need to be re-strengthened.

6.2 Ownership

During housing reform, public housing was sold based on the cost price or discounted price. The land lease was usually not counted into the housing price in terms of free land distribution for public housing development. Only when the owner has paid for the land price they can sell the apartment without limitation in private housing market. Since plenty of direct or indirect subsidies were included in the privatization of public housing, the ownership of privatized public housing is legally a kind of joint-ownership by homeowners, work unit and the state (Hui, 2013). In most cases, only the floor space of an apartment itself was calculated when a public housing apartment was sold. On the contrary, the price of commodity housing includes the floor area of shared space. Thus in the former public housing areas, not only the outdoor public spaces but also the shared spaces of the housing building, including the stair case, pipeline, roof, outer wall, etc., are still public-owned so that the work unit or the government has to be responsible for their maintenance, even though those interior spaces of privatized dwellings can be seen as 'private' properties. Transaction price should include the price of shared space, but it is always a question of how to calculate (Hui, 2013). Also, owners are

not willing to pay for necessary improvement and repair in the shared space. Ambiguity of former public housing ownership lead to difficulties in transaction and maintenance, but this also implies a possibility for public sector's re-intervention.



6.3 Organization and management in danwei housing neighbourhood

Since the establishment of socialist China, centralized political infrastructure has had strong control over the society. Even today, the strong social control is significant in the urban renewal process and daily management in danwei housing neighbourhood. During urban renewal process and daily management, the ambiguous ownership in danwei housing always causes problems. This section will discuss three unavoidable topics in renewing danwei housing.

Renewal of danwei housing neighbourhood

In 2009, to accelerate the renewal of inner city, Shenzhen government announced Shenzhen Urban Renewal Guideline. Renewal scheme could be proposed through negotiation and collaboration between owners and private developers. Government only acted as supervisor instead of the initiative in urban renewal process. However, this resulted in cut-throat competition between private developers. Private developers tried to obtain the land by proposing higher compensation for owners, which would definitely lead to high housing price in the end. As a result, in 2012, government reclaimed the right to propose renewal scheme in former public housing neighbourhood. Nowadays, a renewal scheme starts with government's proposal. If most of the owners agree with the renewal proposal, government will purchase the housing from the owners. After that, government will lease the land through a procedure of 'bid invitation, auction and listing'. Finally, the developers who win the bid start redevelopment. Owners can choose to receive housing in the same neighbourhood as compensation.

Government reinforces its intervention by reclaim the right to propose renewal scheme, but this is far from enough to improve affordability for disadvantaged group. Private developers, whose first concern is profit, decide the outcome of renewal, which is usually wholesale demolition and expensive commodity housing. Tenants, who do not have property, do not have a say to the renewal

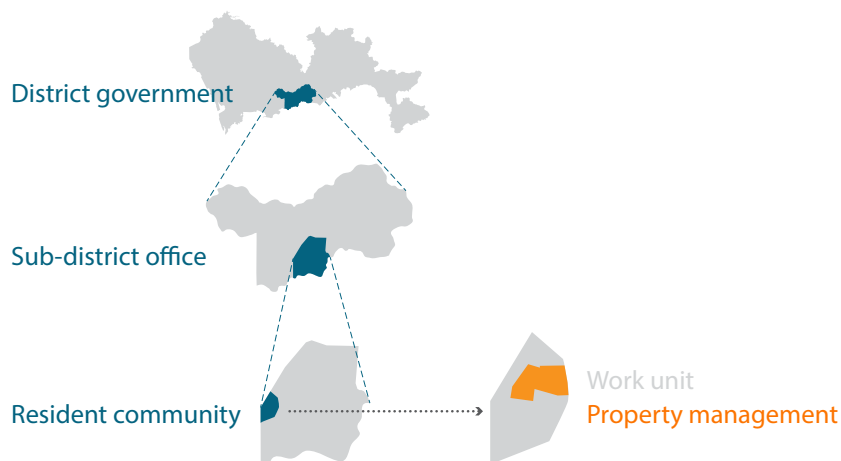
scheme. This results in displacement of inhabitant. Even the property owners have little influence on the planning and design of their neighbourhood except agreement or disagreement on renewal. The outcome may contradict with their interest. This calls for more public intervention and resident participation.

Management

A multi-tiered hierarchy forms the local governance structure in danwei housing neighbourhoods. Firstly, district government stands at the top of the hierarchy and leads the organization below. Second, a sub-district office plays a role as the extension of district government. It shares the responsibility of providing certain public service. Third, resident community (or Jumin Weiyuanhui in Chinese) is at the bottom of the hierarchy which contacts with residents directly.

Resident community is supposed to be self-governance organizations at the grassroots level. They are responsible for mediating disputes, maintaining public order and social stability, developing public services and reflecting opinions and suggestions to the people’s government. They should assist the work of government in all ways. Upper levels of government, namely district and sub-district governments, are to guide, help and support, but not intervene, in the work of the committees (Benewick et al., 2004). There is lack of enthusiasm in local community participation because of limited power in neighbourhood management.

In planned economy period, resident community was responsible for mobilizing those who were not belong to work unit. Since work unit’s responsibility of providing social service has faded away, there need to be an organization that organizes the overall communal affairs. This leads to the emergence of ‘Shequ’ (community) concept. Shequ were supposed to relieve the state of certain duties and responsibilities, such as managing the spatial and social conditions in the neighbourhood, by transferring them to citizens participating in the Shequ. However, the ‘shequ construction’ faces the harsh reality that there are insufficient financial and human resources as well as know-how. Under these circumstances, being dependent on the governmental sector is unavoidable at the initial stages, even though it is not consistent with the administrative reforms and the change to the market economy (Kojima and Kokubun, 2005).



A multi-tiered hierarchy

Besides the multi-tiered hierarchy, owners' cooperation emerges as a self-organisation to defend the collective interest of property owners. Unlike resident community, it is operated by property owners and not led by government or other organisation. Owners' cooperation may be an organisation for effective resident participation. There are some cases that owners' cooperation successfully protects their legal right. Although owners' cooperation is popular in new commodity housing, it is rare in former public housing neighbourhood.

Conclusion

Current urban renewal process fails to include residents' opinion. The top-down structure of urban governance focuses on control. It cannot represent residents' interest and need, and cannot form effective management. Self-organisation can help to reverse such situation.

7

CASE STUDY

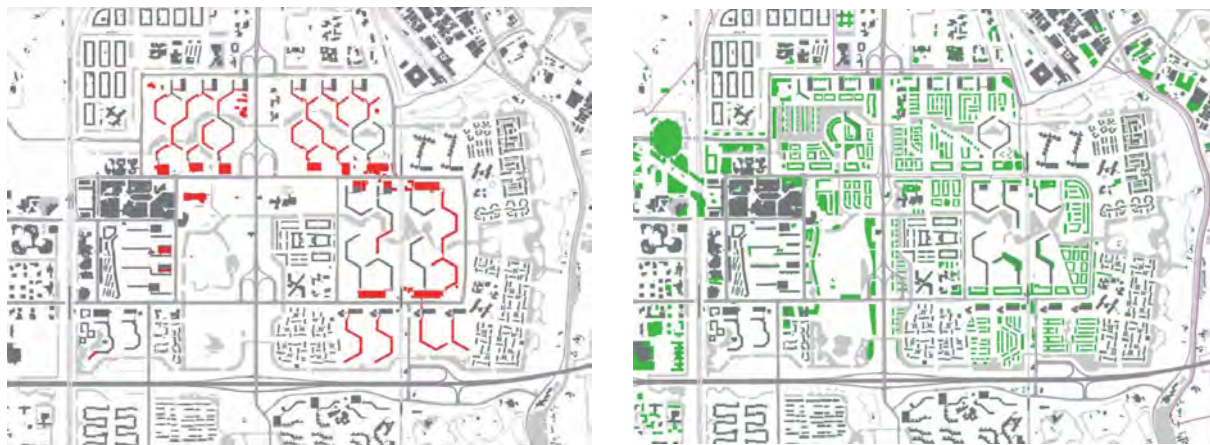
The development of Chinese danwei housing is rooted on particular socio-spatial conditions including housing shortage, urban renewal and governments' perspective of economic growth. The development and transformation of public housing in Europe share similar characteristics. Danwei housing in China and public housing in Europe are both developed by public sectors and face pressure of transformation and renewal later. The European cases can teach the renewal of danwei housing a lesson.

Bijlmermeer

The Bijlmermeer, located in suburban Amsterdam, was developed after war to house the rapid growing population. However, as soon as the construction was finished, problems appeared. First, there is the unfinished character of the district. Second, the enormous liveability-problems took place in the Bijlmermeer. Third, demand and supply did not match properly.

In 1980s, a rehabilitation program was drawn up. Regrettably, there was no great success. During 1990s and 2000s, a much more radical scheme characterised by large scale demolition was launched. Improvement and differentiation of the urban environment was also included in the plans. More functions are being introduced into the living area. Besides the physical renewal the plans are supplemented with both social-economic measures and an intensification of the maintenance to improve liveability. Resident participation helps to reflect the local opinions to the authorities.

The later radical renewal shows a great success. It should be contributed to the improvement of the surrounding Amsterdam Arena area, which is being used as a catalyst to improve the nearby problematic high-rise area. The integrative approach is also worth mentioning. The physical renewal results in more popular housing types and environments. Social and economic renewal results in an improvement in the personal situation of deprived people. Improvement of the liveability and maintenance results in a safer and cleaner place to live. The search for radical solutions is an important reason. This is rightly so, as demolition should not be the starting point of any renewal process, it should rather be, as argued above, in relation to measures that can solve social and economic problems. Finally, participation and focus on residents' need reduce misunderstanding and can form a satisfactory result for residents.



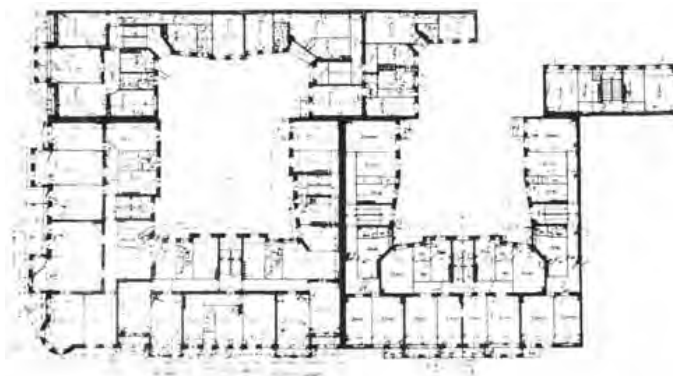
Bijlmermeer before and after radical transformation (Source: <http://failedarchitecture.com/the-story-behind-the-failure-revisioning-amsterdam-bijlmermeer/>)

Germany

In Germany, the definition of social housing, in general, depends on three criteria: target group, subsidy and rent. The target group is defined by income: only those whose incomes are lower than a certain standard can be tenants of social housing. Social housing is subsidized by the government and rents are controlled according to the agreement between the owners and the government. This is a form of public-private partnership. A term of agreement is usually 15 years (which can be extended for the next 15-year term) and, during the term of agreement, the allocation of social housing is responsibility of the government. This kind of housing provision follows a concession model with two important characteristics. First, social housing is actually independent from ownership. Second, social housing is 'temporal'.

The deterioration of old housing demand renovation. Renovation is seen as a strategy to balance housing affordability and economic feasibility. In the case of Block 118 in Berlin, instead of re-privatization, renovation transforms private-rented to social housing. The massive change of floor plan was avoided by the more efficient use of the current apartments, including the dwelling exchange between tenants dependent on their actual demands. Only necessary amenities were added and improved. More importantly, some innovatively technical solutions were developed in order to reduce the cost and to simplify the procedure. Moreover, since the renovation proceeded without the clean-up of tenants, the 'consequential damages of resident clean-up' was also avoided.

The success is reasoned from the improvement of overall living environments including public space. Public intervention led the renewal project. Most of the cost was afforded by government (90%). Phasing building by building (30% vacancy at the beginning of renovation) kept the residents in the neighbourhoods.



Housing renovation without massive change: Renovation plan of the first phase of renewing Block118
(Source: Hui, 2013, p400)

Vienna

The housing in Vienna is characterised by the strong public intervention. 60% of all the household live in social housing which targets at different strata. The rental social housing is usually developed, owned and managed by the local authority as municipal housing (only for rent) and the non-profit housing association. Social housing is highly subsidized by the tax revenue by government. Adapted

measures are adopted for controlling rent increases and avoiding the displacement of resident and social segregation.

The success of social housing in Vienna is grounded in clear clarification of right and responsibility. There are more rights of tenants in the decision-making on housing improvements than of the landlords. Hence, the housing right of tenants is highly secured and they can be counted as 'semi-homeowners'. The responsibilities are distributed, in general, in a collaborative framework. The partners of the so-called 'soft urban renewal' include both public and private actors: state, municipality, wohnfonds_wien (a public association responsible for purchasing of needed land and organization of housing developers' competition), area renewal offices, public/private landlords and tenants. The principle for renewal includes distribution of responsibilities between property owners and tenants, participation of tenants, tenant-oriented renovation scheme and substitute housing offers.

Another reason of success is urban rehabilitation with economic sustainability. An understanding forms that the renovated apartments are not necessary to achieve the standard of newly-built houses. Large amount of public funding plays a role as incentive, a partnership between public and private actors is financially established in accordance with their rights and obligations. The renewal involves local economy: the area-based small enterprises, markets, shopping streets and offices.

'Soft urban renewal' that is identified by the combination of top-down and bottom-up forces and public-private partnership, is led by the strong public intervention. Clear distribution of responsibilities between property owners and tenants make the renewal succeed. Alderman van der Ploeg (Hui, 2013) drew a conclusion that urban renewal could only move forward if the tenures were transferred to the public owners (including the municipality and housing associations), which lead to the change of strategy to the communalization and socialization of housing stock.

Lessons

In terms of spatial strategy, the integrated approach of improving surroundings and public space is necessary. Wholesale demolition, which would greatly increase price, should not be starting point. When it comes to institutional aspect, renewal process should encourage participation and focus on residents' need. Strong public intervention can be a way to realize social commitment. Ownership can be an intervention focus. First, social housing can be independent from ownership. Second, clear distribution of responsibilities between owners and tenants contributes to proper maintenance of buildings.

	State	City	Wohnfonds _wien	Owners	Tenants	
Legal Framework	Red	Orange				
Financing	Red	Orange				
Rules		Orange				
Administrative Framework		Orange				
Organization of Urban Renewal		Orange	Yellow			
Organization of Urban Housing			Yellow			
Renewal Scheme			Yellow	Blue		
"General Parts" of Building				Blue		
Modernization of Inhabitated Apartments					Pink	
Approval of Scheme			Yellow			
Public Tender			Yellow	Blue		
Recommendation for Subsidies			Yellow			
Setting the Rents		Orange		Blue	Pink	
Renewal Subsidies		Orange		Blue		
Allowances to Tenants		Orange			Pink	

Distribution of responsibilities in reneal (Source: Hui, 2013, p438)

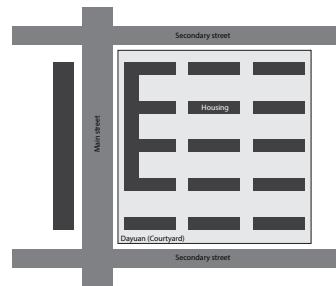
8

STRATEGY

A framework from analysis to intervention

Here we already have a full overview of danwei housing neighbourhood. The outdated design of danwei housing cannot satisfy the changing need of resident. Therefore, informal transformation adapts the unsatisfying living environment to residents' need. Simultaneously, market transfers the need into the transformation. These two driving forces result in both good and bad result. The current driving forces are self-organized and profit-oriented. We need formal transformation that organized all the intervention systematically and we need to strengthen public intervention to regain housing affordability. As a result, based on the spatial and institutional analysis, five strategies are proposed.

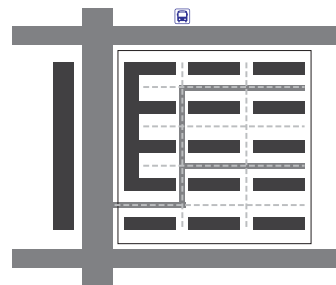
The five strategies are rezoning community, connecting home and work, defining public space, diversifying building and housing typology and strengthening public intervention and communal organization. They correspond to the four elements of spatial layout and institutional aspect respectively. Therefore, the strategies are not only solutions to problems but also a framework to analyse given danwei housing neighbourhoods.



Dayuan

General conclusion

- Three-level spatial structure
- Context specific conclusion
- Boundary condition variation
 - Passing in neighbourhood



Connection

General conclusion

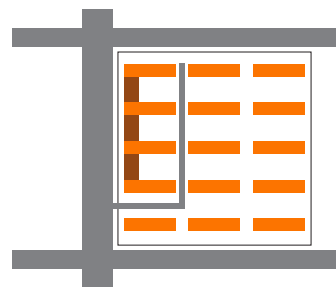
- Dead-end road
 - Lack of space for commercial
- Context specific conclusion
- Division of car and pedestrian
 - Disconnection



Morphology

General conclusion

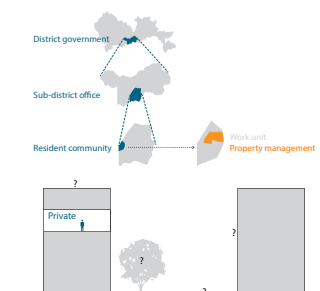
- Homogenized public space
 - Shortage in Parking
 - Privatization of public space
 - The elderly and children are not friendly
- Context specific conclusion
- Lack of public facilities



Building typology

General conclusion

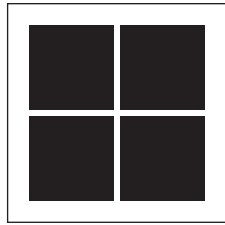
- Deterioration
- Lack of housing typology
- Unorganized transformation
- Diversity on ground floor
- Diversity of resident



Institutional aspect

- Over-marketized housing
- Ineffective top-down government
- Ambiguous ownership

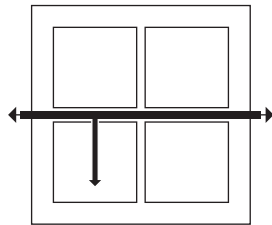
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Rezoning community

- Define privacy levels according to existing function and passing
- Encourage small scale concentration

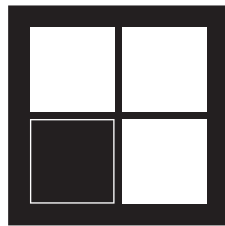
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Connecting home and work

- Strengthen main streets
- Restrict passing in neighbourhood units

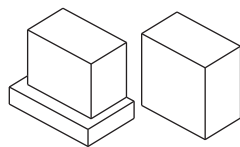
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Defining public space

- Integrate public space and functions, connections
- Create enclosed neighbourhood unit through public space design
- Clarify ownership

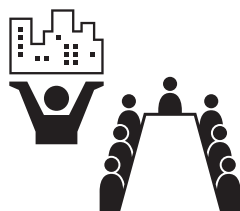
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Diversifying building and housing typology

- Diversify housing typology for different income groups
- Diversify function

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Strengthening public intervention and communal organization

- Establish housing association
- Encourage communal participation

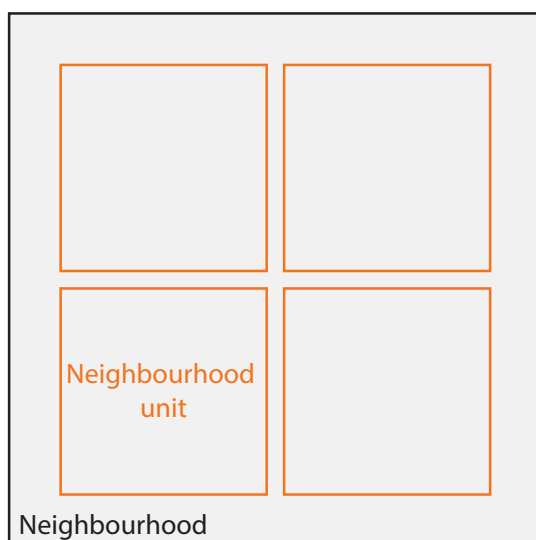
Rezoning community

Although the multi-level spatial structure of danwei housing facilitates residents' effective control over neighbourhood, the context of neighbourhood changes and the old structure does not always work. It is necessary to restructure danwei housing neighbourhoods spatially according to existing context. The interventions are context-specific, but there are some principles about how to 'rezone'.

First of all, defining privacy levels of space can reduce unnecessary interference from exterior of neighbourhood. The strategy proposes a three-level structure. City level contains all kinds of functions commerce, transport, office, etc. Neighbourhood level is mainly for residents and contains functions closely related to residents' daily life like local business, schools and parks. Neighbourhood unit level does not welcome passing and is only for residents.

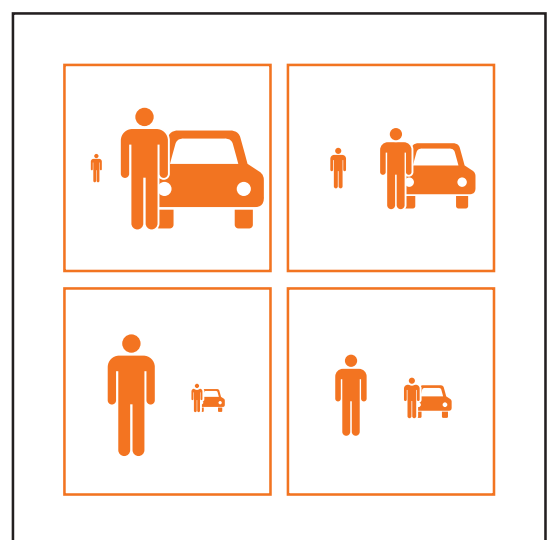
Especially in big neighbourhoods where shops are a bit too far, passing exists because of desire for nearby shop and service. Passing increase anonymity and weaken residents' control and finally damage safety. In this case, rezoning the space for passer-by and space for residents can reverse such negative condition.

In consideration of social mix, each neighbourhood unit focus on certain income groups. This can reduce conflict between different social strata as well as prevent social segregation on neighbourhood scale. Proportion of target groups should be bases on historic condition. Based on composition of resident, housing typology and design of public space can be decided. Considering that daily social interaction mostly takes place among residents living in one stair, concentration can be limited within one building. Each building should be designed for one income group and the whole unit can contain different income groups.



City

Neighbourhood unit

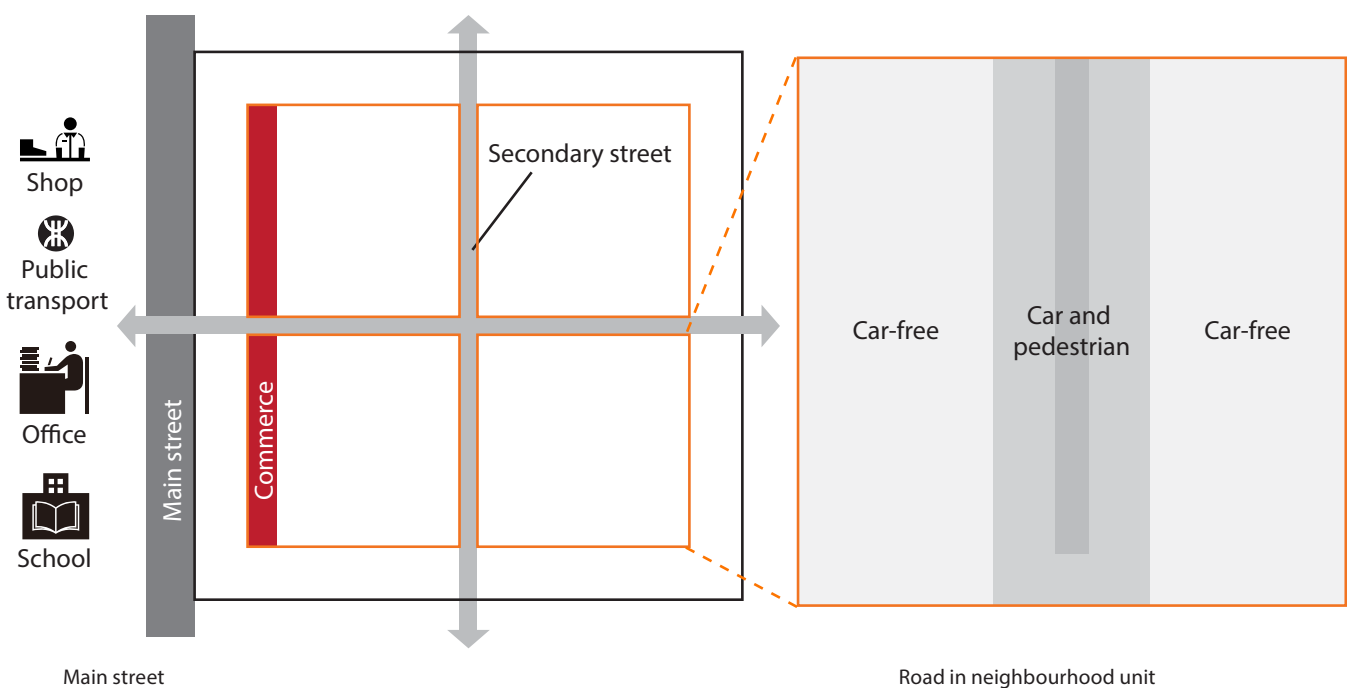


Different proportion of income groups

Connecting home and work

Connections on different privacy level follow different principles. On neighbourhood scale, a main street which contains functions related to daily life is convenient for residents. So, routes should be strengthened according to existing demand. Places which relates to daily life like work place, shop, school and public transport should be included in the street network. Business tends to accumulate along connection. Design of the main street needs to consider space for local business and parking. Secondary streets, which are mainly for residents, connect neighbourhood units and main streets.

Within neighbourhood units, passing should be restricted. To create a safe living environment, division of car (and parking) and pedestrian is necessary. First level of road is responsible for guiding parking near home. Second level of road is the entrance area outside the building, which is only for pedestrian.



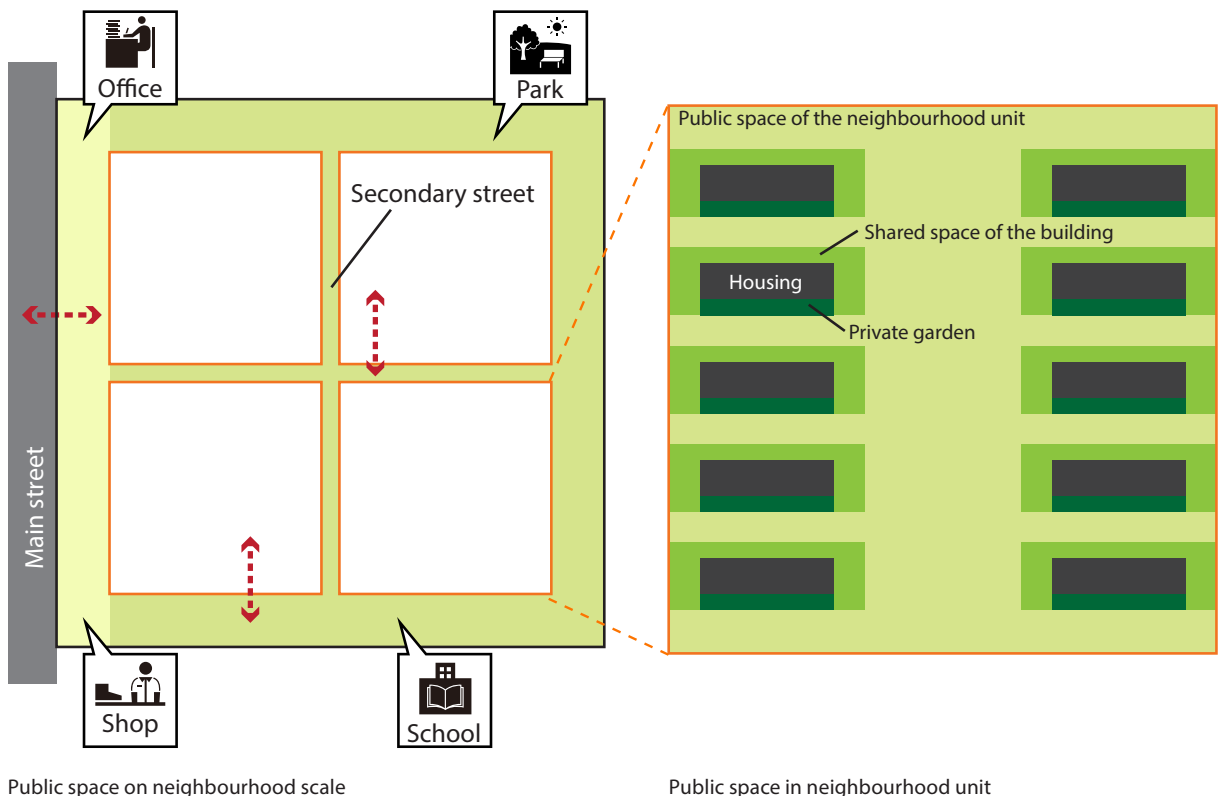
Defining public space

Homogeneity characterises the public space in danwei housing neighbourhood. This strategy aims to activate the public space by defining the function of public space on different privacy level. On neighbourhood level, connections, economic activities and social interaction are quite important. Public space on this level is for commerce and social interaction among residents and passer-by. Planning of public space can integrate with street and functions such as school, office, shop and other neighbourhood. It should be accessible from city and neighbourhood units.

Public space in neighbourhood units is the territory for residents. The question lies in how to isolate inside and outside properly. Compared to 'hard' barrier like wall or fence, 'soft' barrier (green, buildings) can create a feeling of enclosure but still keep the convenience for residents.

Ambiguous ownership brings difficulties for maintenance and urban renewal. Government and residents have to clarify responsibility and ownership of the public space, buildings and infrastructure. Owners should hold the responsibility of maintenance.

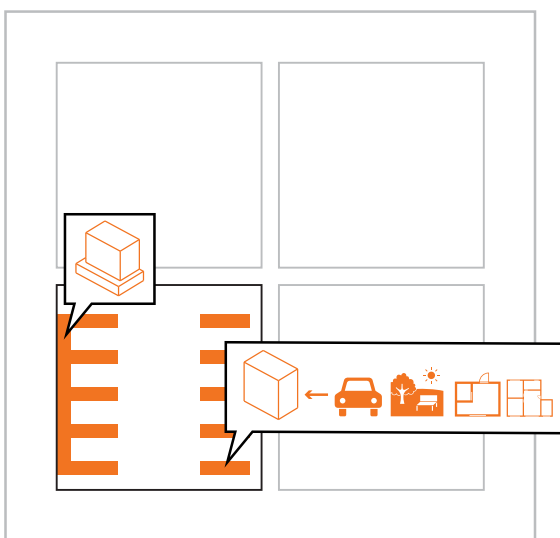
What's more, the elderly and children's need should be reflected in public space design.



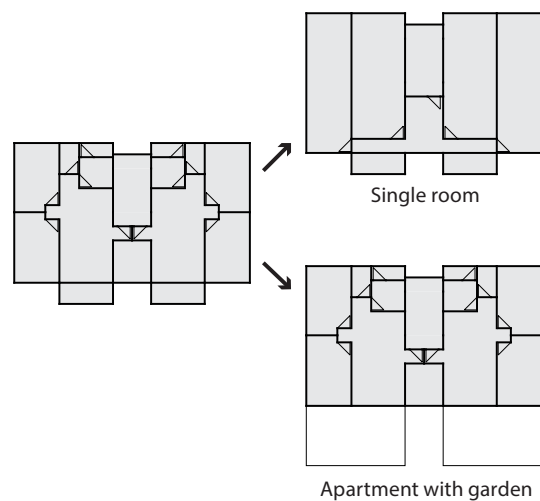
Diversifying building typology and housing typology

Danwei housing was originally designed for family. As the residents diversify, housing and building typology has to adapt to the changing demand. In consideration of affordability, renewal is the main approach instead of wholesale demolition. To satisfy the housing need of the young migrants, transforming family apartments to single rooms is one of the methods. Middle income group has higher expectation on living quality. Their housing can be more diversified, for example, housing with private garden or parking, duplex apartment, etc.

Residential building dominates the building typology in danwei housing neighbourhood. Slab apartment building can no longer suit the increasing diversity in danwei housing neighbourhood. Ground floor has high commercial value and has more potential. For the building along main streets, the renewal can integrate parking, storage, public space and shop. Podium building is more preferable. However, residential buildings which are not located on main streets should not involve so much commerce.



Diversifying building typology



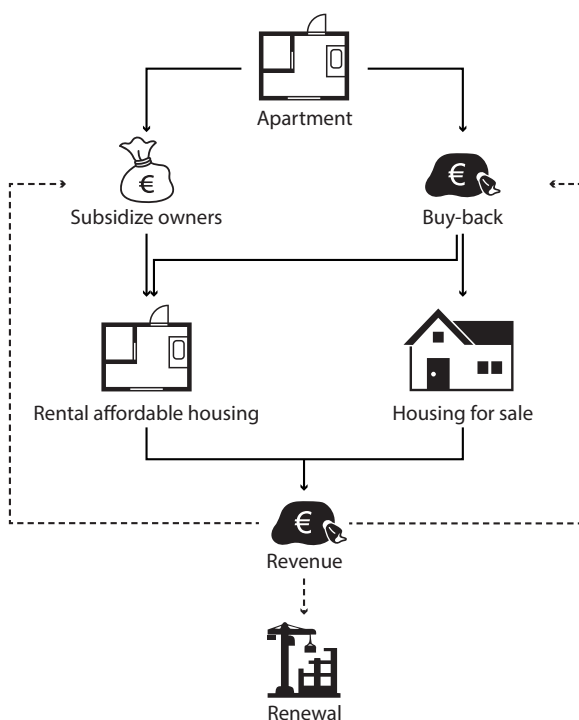
Diversifying housing typology

Strengthening public intervention and communal organization

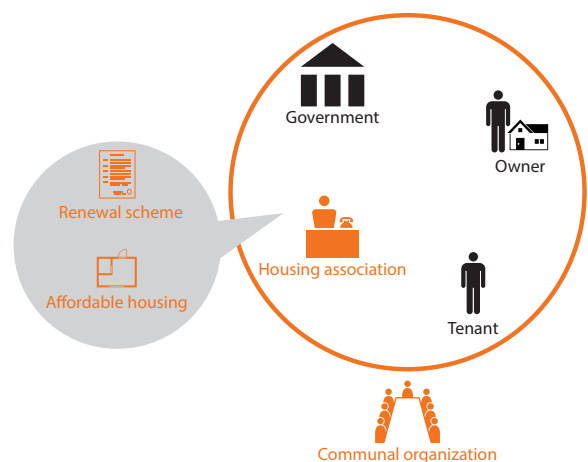
The radical housing reform over-marketizes housing stock and makes housing unaffordable. The return of public sector is the only way that can regain housing affordability. Through 30 years of housing reform, a consensus has formed that socialisation and collaboration between public and private sector are effective solution to housing problem. Instead of direct intervention from government's housing agency, a non-profit housing association subsidized by government is responsible for operating renewal scheme in degrading neighbourhoods and managing affordable housing.

The housing association has various ways to intervene in danwei housing neighbourhoods. First, it can re-buy the former public housing. After transformation or renovation, housing will be turned into affordable housing for sale and public rental housing. Second, it can transform private rental housing into affordable housing by subsidizing the owners. Rents are controlled according to the agreement between the owners and the housing association. During the term of agreement, the allocation and management of affordable housing is responsibility of the housing association. The revenue from rent and sale subsidizes the cost of renewal.

Besides public intervention, what is missing now in danwei housing neighbourhood is a self-organization. A communal organization that includes owners, tenants, housing association and government provide a platform for discussion on communal affairs. Decision should be made based on consensus instead of command from higher authorities.



Public intervention in provision of affordable housing



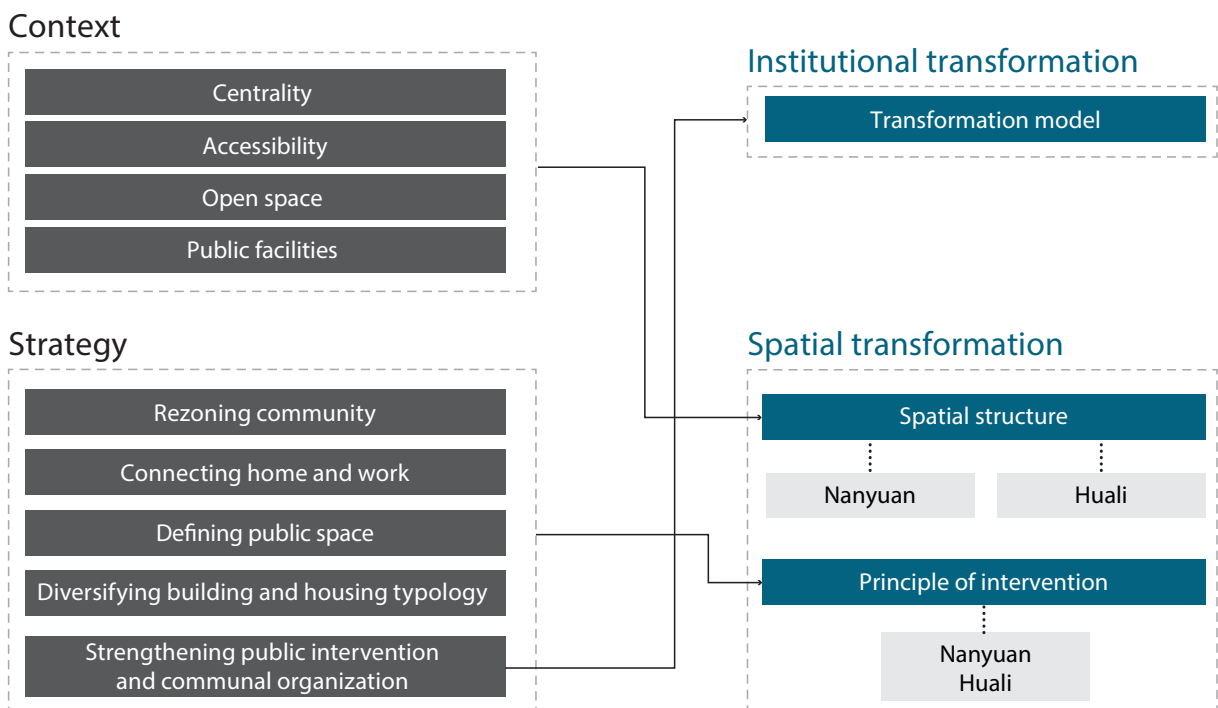
Housing association and communal organization

9

RENEWAL SCHEME

From context and strategy to intervention

Renewal scheme consists of two aspects. First, institutional transformation aims to strengthen public intervention and communal participation by establishment of housing association and communal organization. This section proposes a transformation model that stakeholders can cooperate together and carry out the renewal scheme. Second, spatial transformation aims to improve the physical environment. The contexts of danwei housing neighbourhoods vary. Analysis of contexts positions the neighbourhoods and proposes context-specific spatial structures. On the contrary, the spatial layout of danwei housing is similar. Interventions in different neighbourhoods follow the same strategies and principles.

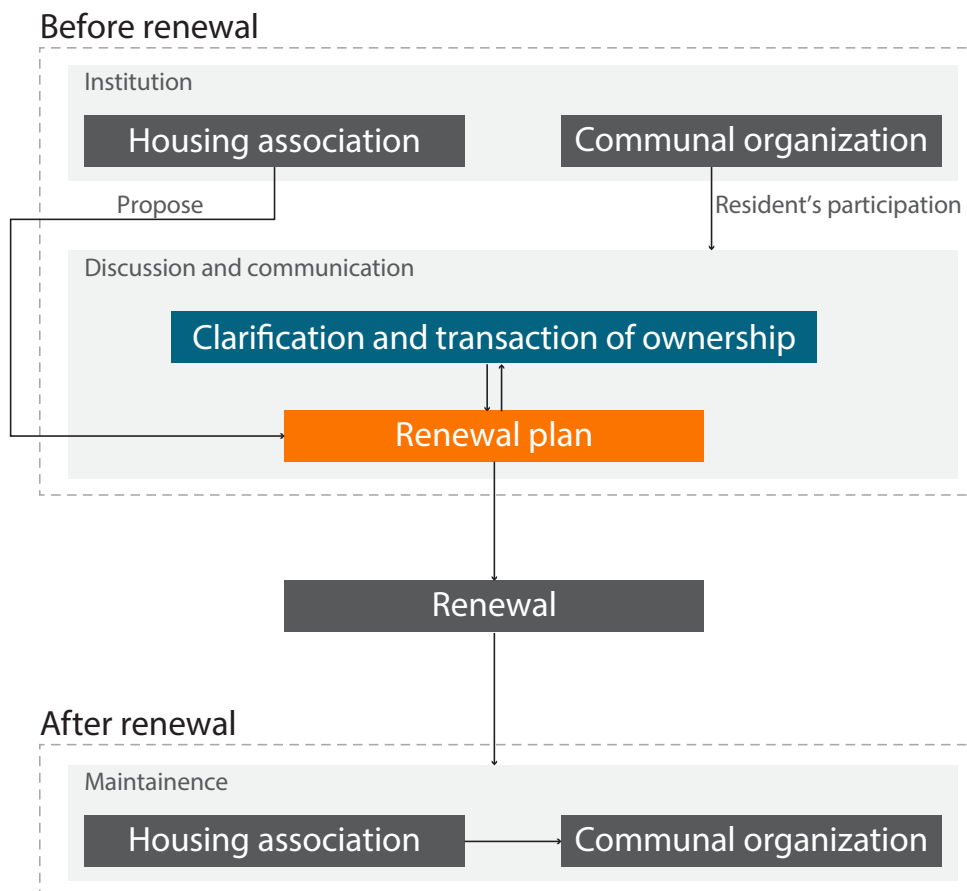


From context and strategy to intervention

9.1 Institutional transformation

Transformation model

The procedure of renewal consists of three periods. Before implementation of spatial transformation, government establishes housing association and communal organization. Housing association is responsible for proposing a renewal plan. Communal organization is a platform for discussion, which aims to involve the need of residents. The renewal plan allows modification according to residents' need. Certainly, the plan includes demolition, transformation and new construction. So, there must be transaction and clarification of ownership. After the consensus of the plan has formed, construction can start. When the transformation completes, communal organization become an institution to manage the communal affair. Housing association takes the responsibility of management of rent and sale of affordable housing.

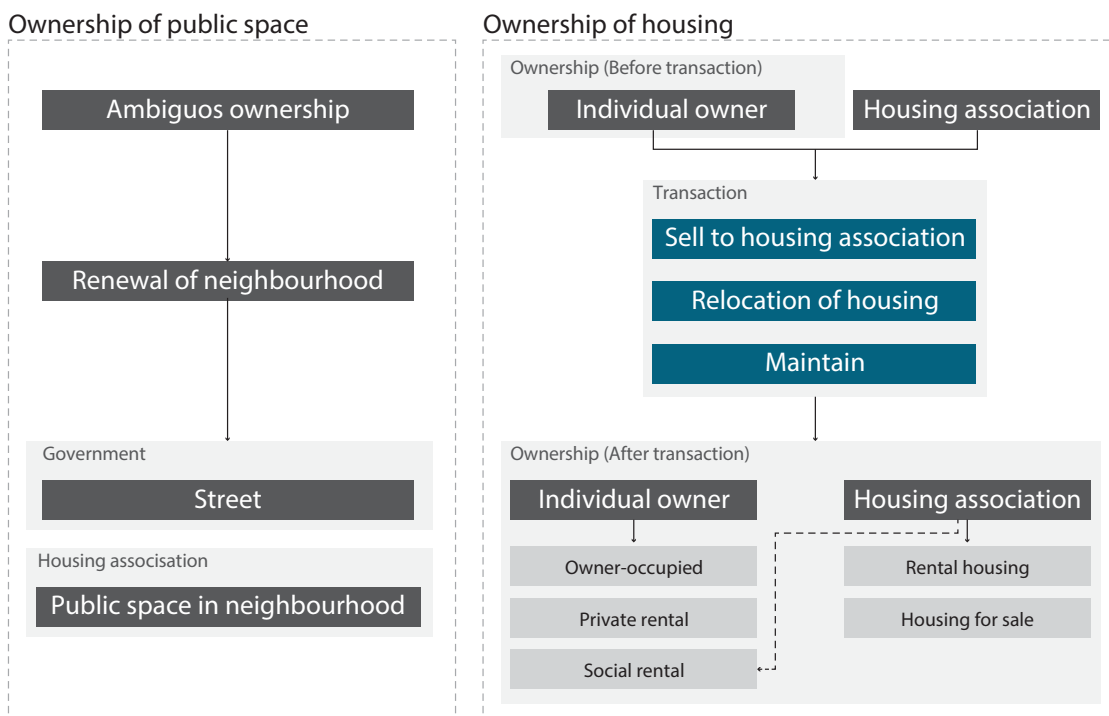


Transformation model

Clarification and transaction of ownership

Spatial transformation can hardly start without clarification and transaction of ownership. Ambiguous ownership in danwei housing leads to a lot of problems in maintenance. Renewal is a chance to solve the problems resulted from ownership. The intricate conditions of ownership require more attention to the interest of residents. First, residents and housing association have to clarify the ownership of public space, which is a negative result of housing reform. Clarification of ownership helps to clarify the responsibility of maintenance. The strategies restructure the street hierarchy, so some neighbourhood streets will be upgraded as public streets, which will be maintained by government. Public space in neighbourhood units belongs to housing association and residents should pay for the maintenance fee. Second, renewal of neighbourhood involves demolition, transformation and construction of building, which means that changes of ownership are inevitable. Housing association organizes the transaction of ownership according to housing association's renewal plan. There are three ways of transaction. Owners who want to leave the neighbourhood can sell it to the housing association. Owners whose houses are demolished or transformed can relocate in the same neighbourhood. Other owners can keep the ownership of their properties unchanged.

Housing association will lease or sell the housing owned by housing association after renewal. Individual owners can either live in their property or lease them. Sales of private housing should be restricted after renewal in case of speculation. In the condition of leasing, individual owners can also make agreement with housing association to transfer the right of allocation and management of housing to housing association. Rents are controlled according to the agreement between the owners and the association. Housing association will allocate the rental housing to people in need.



Clarification and transaction of ownership

9.2 Spatial transformation

Site selection

The aim of this section is to present the application of the strategies in renewal of danwei housing neighbourhoods. The contexts of danwei housing neighbourhood vary in functions, connections, open space and public facilities so it is necessary to show how the strategies work in different contexts with different sites. Two areas, Nanyuan and Huali, located in quite different contexts, are chosen as example sites. They represent two opposite tendency in each aspect of contexts respectively. Nanyuan is close to centre, accessible, served by convenient public facilities but lack of open space. On the contrary, Huali is away from centre, less accessible, and has relatively less convenient public facilities. But it is close to open space.

The renewal schemes start with the analysis of contexts, based on which preferred spatial structures and position of the neighbourhoods are proposed. After that, interventions which follow the strategies illustrate how to carry out the renewal schemes.



The selection of sites is based on their contextual difference

Nanyuan



(Source of photo: Google earth)

Functions

This residential area is located in a strong commercial centre, where many people work, especially migrants. Neighbourhoods are relatively small and spread over the commercial zone. The living environment of these small neighbourhoods is more vulnerable because disturbance from outside can easily reach the inner part of neighbourhood. Cell phone wholesale, which brings about much traffic, even emerges near the gate of neighbourhood. Public facilities including schools, sport centre, hospitals are located near residential area. Most of them are located along main streets. In this case, the residential area shares all kinds of functions with the city.



Legend

- | | | | | | | |
|-----------------------------|--------------------------------|-------------------|---------------|---------------|--------------|--------|
| Danwei housing | Commerce and office | Public service | Urban village | Metro station | Health care | School |
| Danwei housing and commerce | Commodity housing and commerce | Commodity housing | Open space | Bus | Sport centre | |

Function



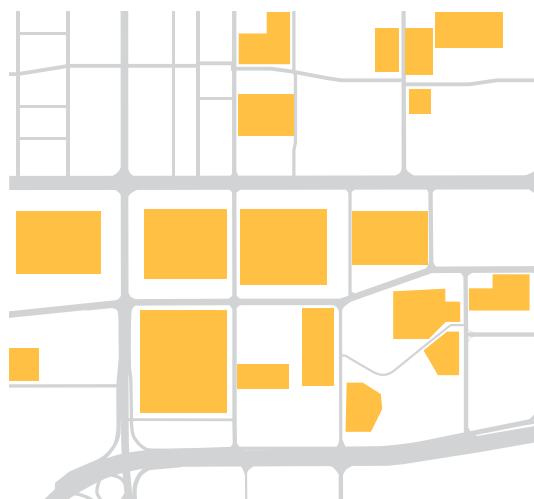
Commerce



Centre



Residence



Scattered residential area



Health care, school and sport



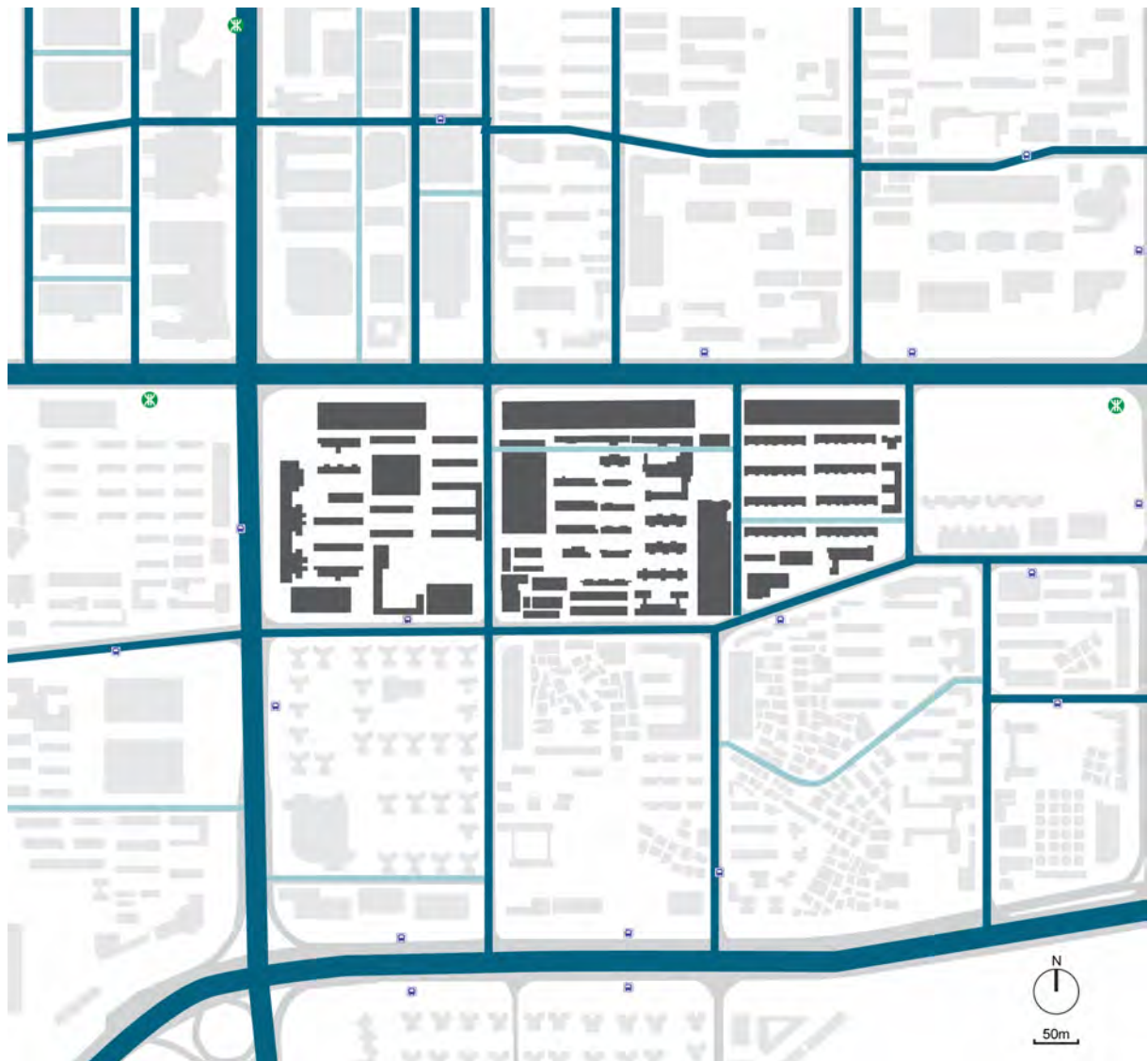
Convenient public facilities





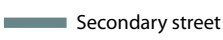


Residential building (Photo by author)

Connection

The convenience of street network and public transport characterise this area. There is dense street network so the residential area is accessible with car or walking. Two metro stations are located within five minutes walking distance from the neighbourhood. The lack of organization of connection in residential area induces unwanted through traffic. The mix of pedestrian and car in the neighbourhood make the public space not safe for pedestrian.



- Legend
-  Metro station
 -  Bus
 -  Arterial road
 -  Main street
 -  Secondary street

Connection



Passing in neighbourhood



Passing inside neighbourhood (Photo by author)



Road inside neighbourhood (Photo by author)

Open space

Because of the central location, there is not much public space. The only piece of green is located at the corner of one of the block but it was gated. There are a playground and some facilities for children. However, there was no much usage because the facilities have rotted.



Legend

- | | | | | | | |
|-----------------------------|--------------------------------|-------------------|---------------|---------------|--------------|--------|
| Danwei housing | Commerce and office | Public service | Urban village | Metro station | Health care | School |
| Danwei housing and commerce | Commodity housing and commerce | Commodity housing | Open space | Bus | Sport centre | |

Public space



Gated green space near residential area



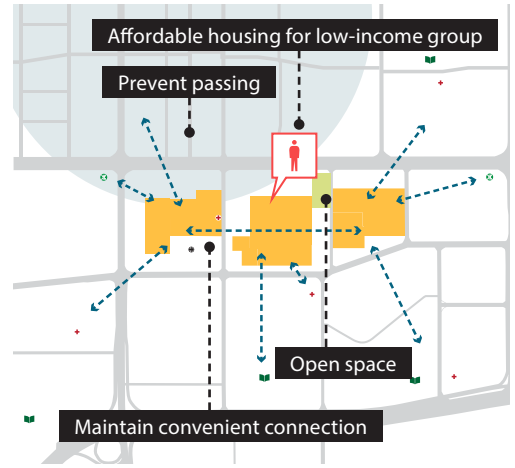
Lack of open space for people (Photo by author)



Gated open space (Source: Tencent map)

Aims

Nanyuan is in a multi-functional area. It shares facilities with the surroundings and require frequent connections. The neighbourhood has been well integrated with the city. Residents can benefit a lot from the convenience of downtown life. The renewal plan aims to keep the residential area as a quiet 'island' in a bustling commercial centre. To achieve this aim, convenient connection, the feature of Nanyuan area, should be strengthened. At the same time, a quiet living environment should get rid of unwanted passing. Adding open space can satisfy the heavy demand of social interaction and recreation in downtown. More job opportunity attracts migrants to settle in. Affordability is the main concern for housing.



Aims



Legend

- Housing
- Commerce and housing
- Square
- Metro station
- Health care
- School
- Commerce, office, public facilities
- Green
- Road
- Bus
- Sport centre

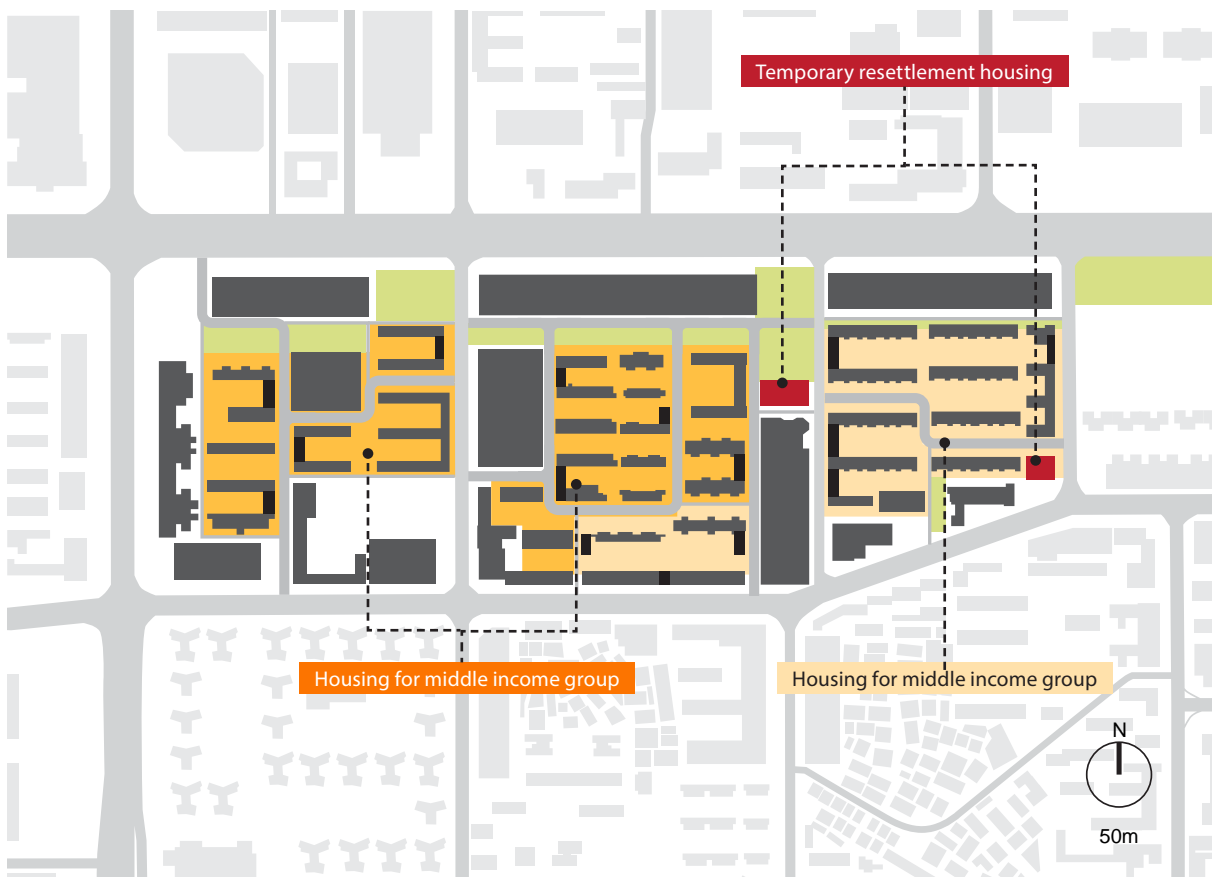
Structure

Towards a safe and affordable neighbourhood

Rezone the neighbourhood to form smaller neighbourhood units with sense of enclosure. This reinforces residents' social control and thus increases safety.

Each unit targets one income group, which means that housing typology varies in neighbourhood units.

Phasing renewal by neighbourhood units prevents replacement of residents. Temporary housing is built in the neighbourhood in advance to settle those whose housing need transformation.



Legend

- Low-income housing
- Middle and mid-low income housing
- Existing housing
- New housing
- New street
- Existing street
- Open space

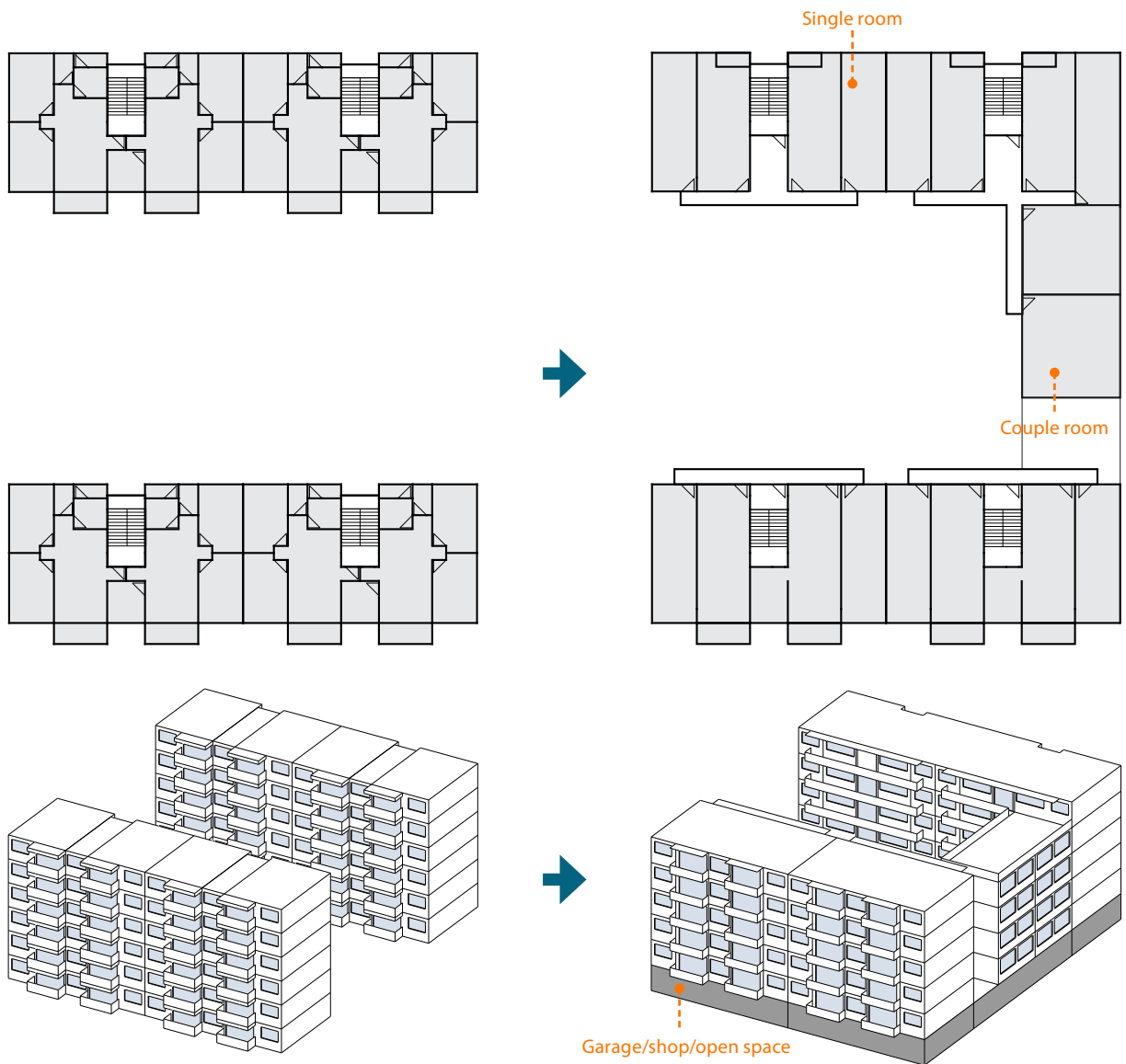
Neighbourhood unit

Low quality building, for example, buildings with too high density or serious deterioration, will be demolished. New construction compensates the reduction of housing from demolishment.

The ground floor of buildings along main streets can contain more diversity of functions. In neighbourhood units, ground floor can only be filled by garage, elevated open space and housing.

To provide more affordable housing for low-income group, transform some of the existing family apartment to single room.

A community centre is added as space for social interaction and holding communal affair.



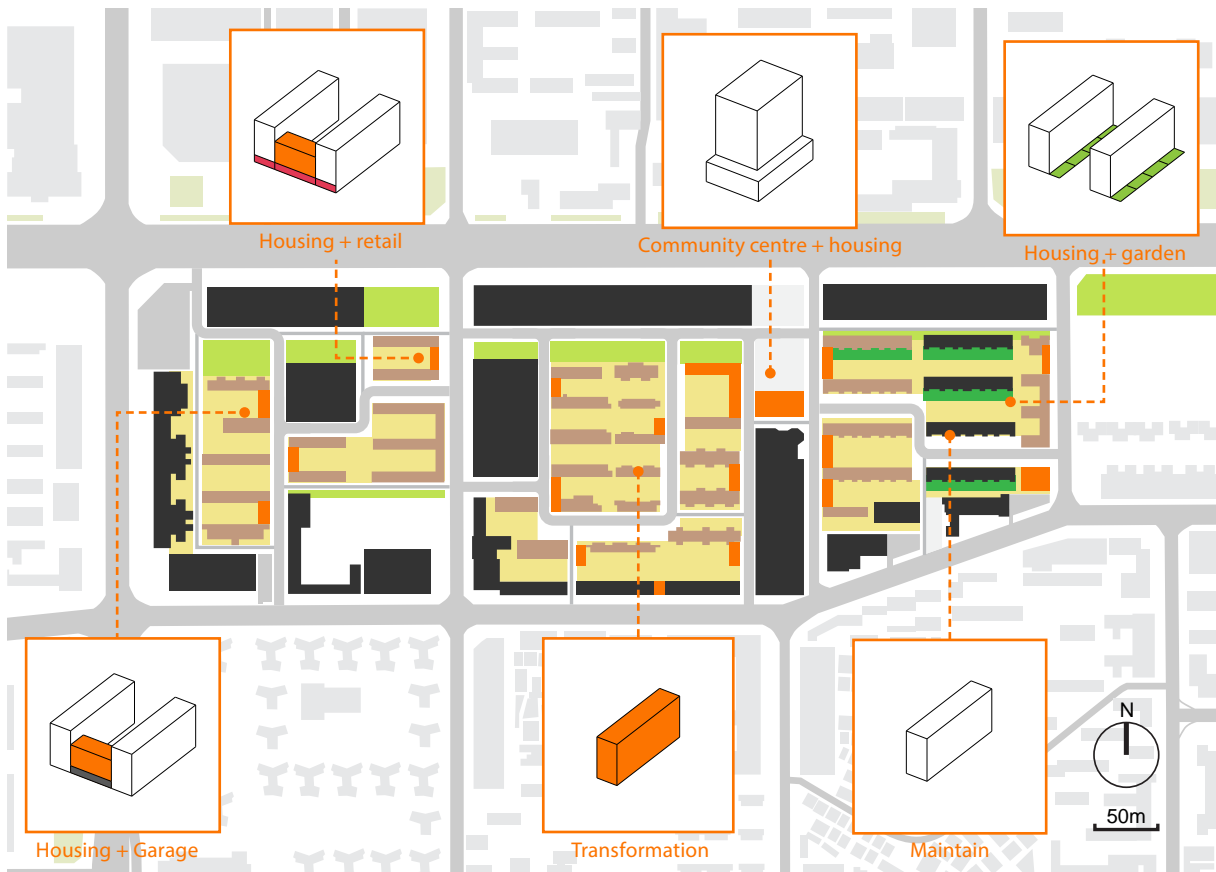
Transformation of housing typology



Demolishment



High density and low quality



Housing + retail

Community centre + housing

Housing + garden

Housing + Garage

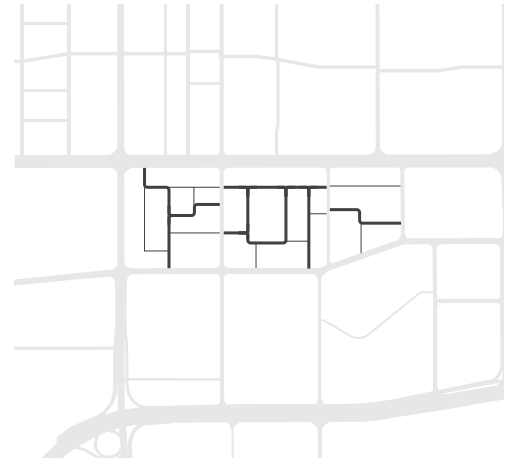
Transformation

Maintain

Diversify building and housing typology

Maintain the convenience of connection

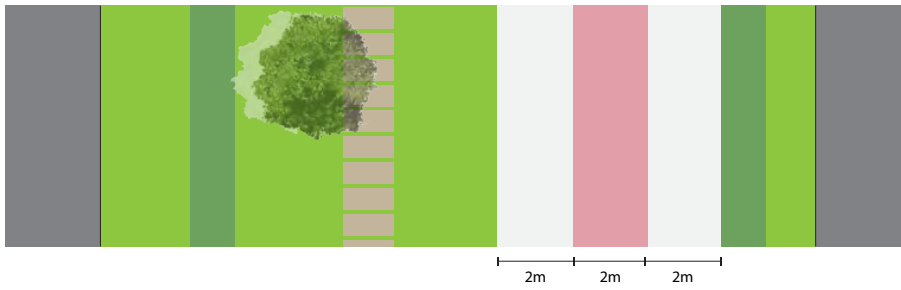
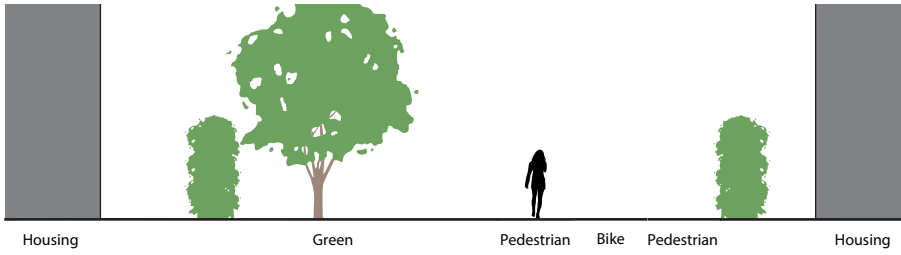
Restructuring street hierarchy keep convenient connection as an advantage and reduce unwanted passing as well. Secondary streets, which emphasize slow traffic, are added in to connect home and main streets. They are for car and pedestrian. The design of the street includes parking and should prevent straight streets. The pattern of the street follows the existing structure of the neighbourhood to reduce demolition. Footpaths, which are only for pedestrian and bike, connect homes and secondary streets. To reduce demolition and destruction to existing social network, the plan encourages reusing the existing connections.



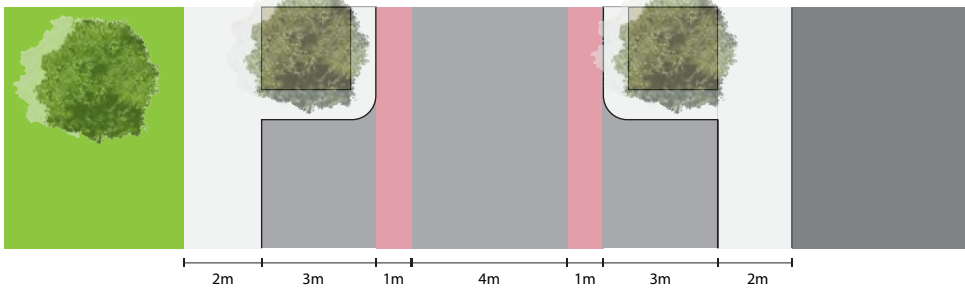
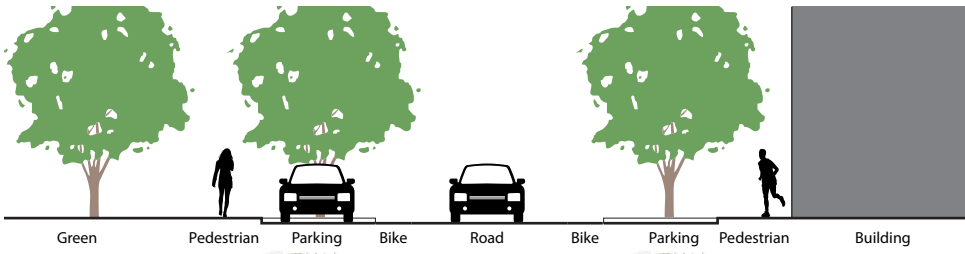
New street



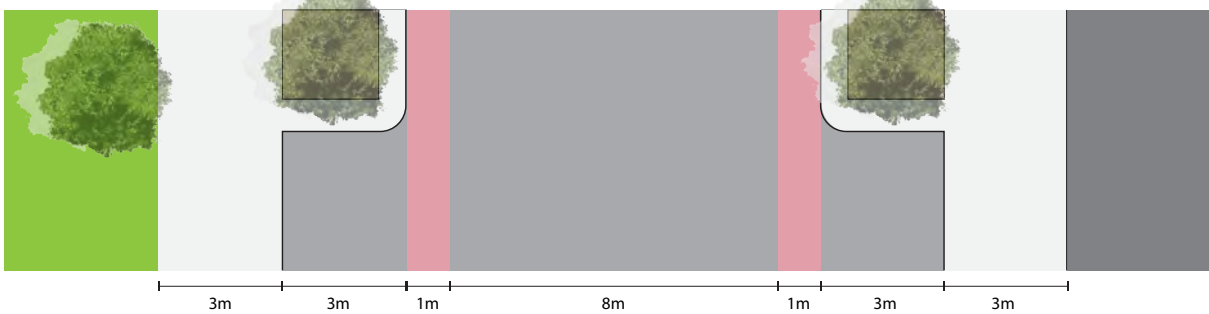
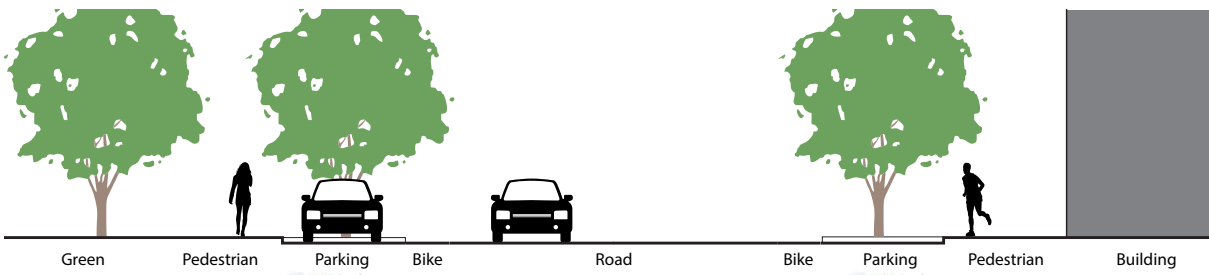
Secondary street, footpath and public space



Footpath



Secondary street



Main street

Open space for social interaction

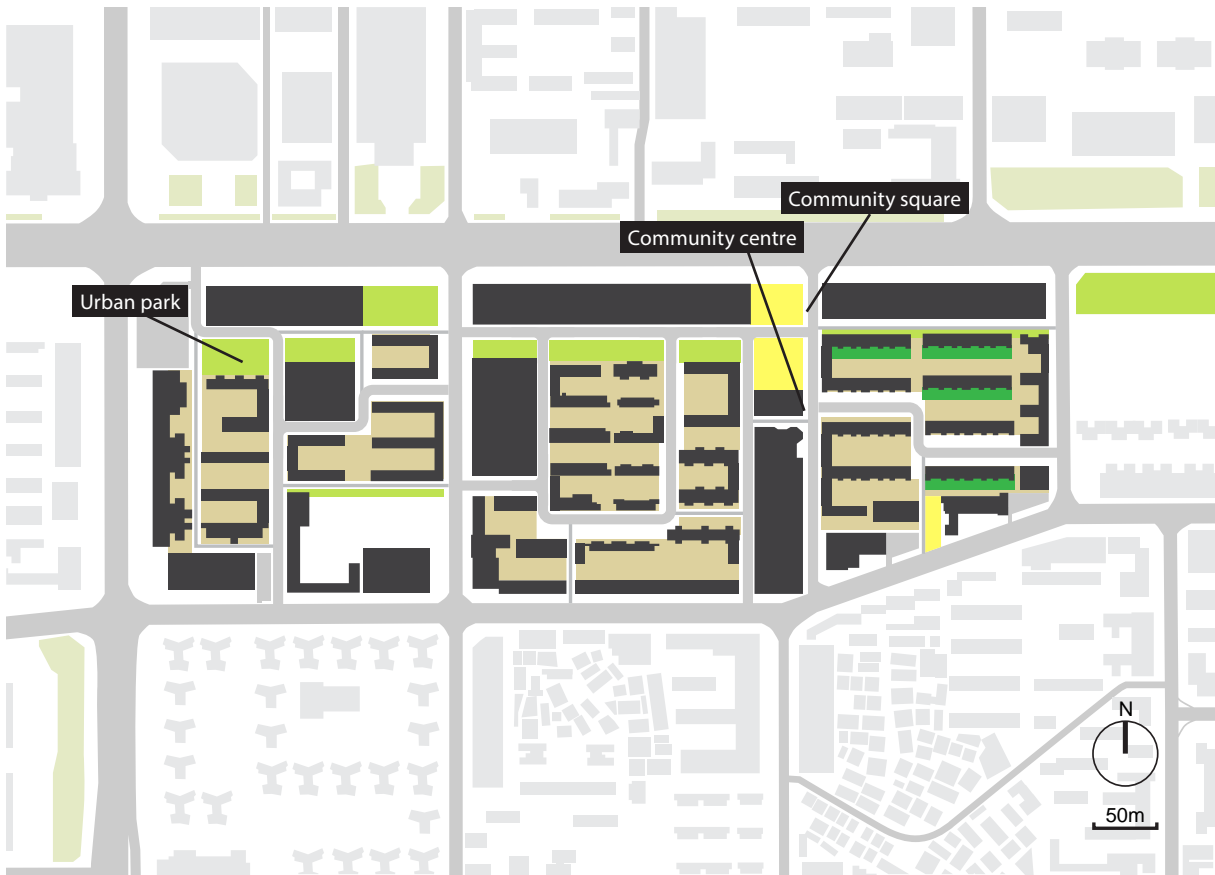
Open space together with connections acts as buffer zone between commercial area and residential. Also, it is for social interaction and recreation. Two gated parks are transformed to communal square which can be place for recreation for both the neighbourhood and city.



Urban park



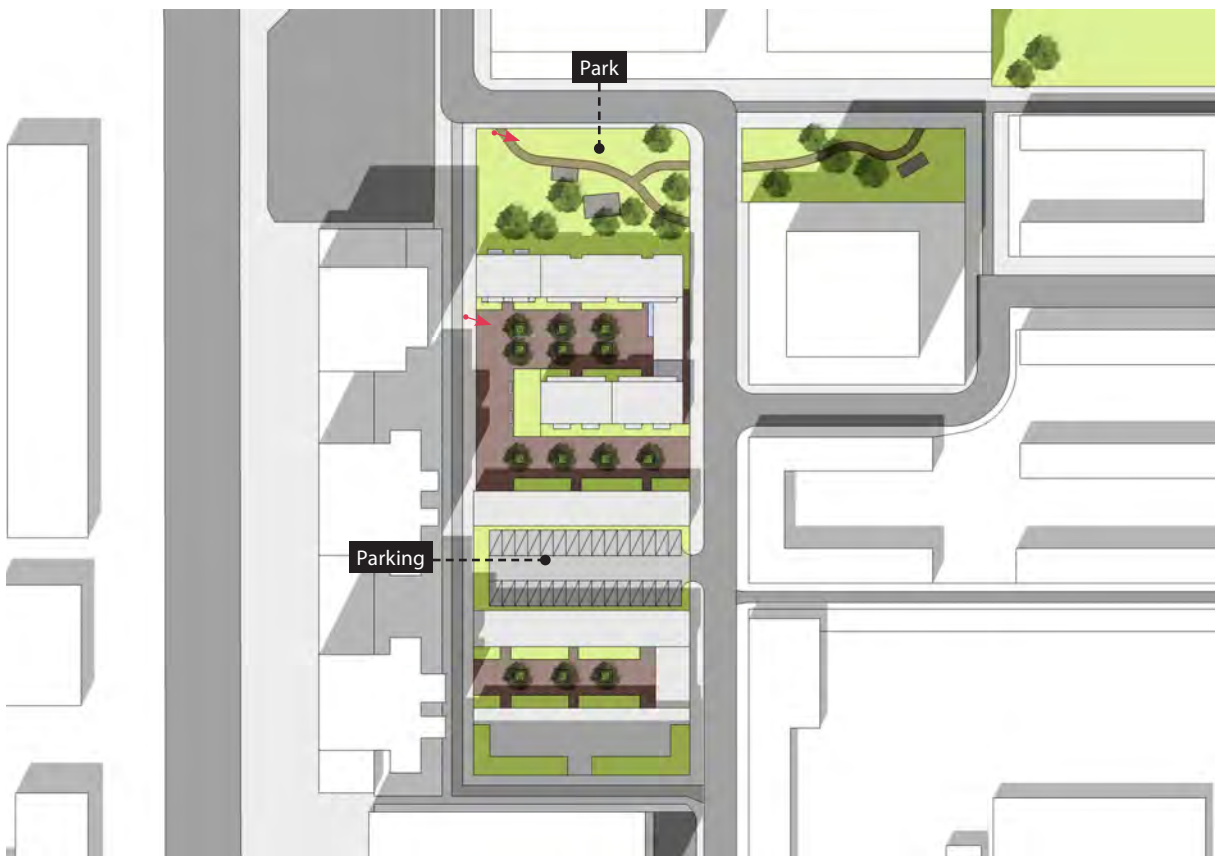
Open space inside neighbourhood unit



Legend

- Green buffer
- Community square
- Building
- Community park
- Neighbourhood unit

Open space

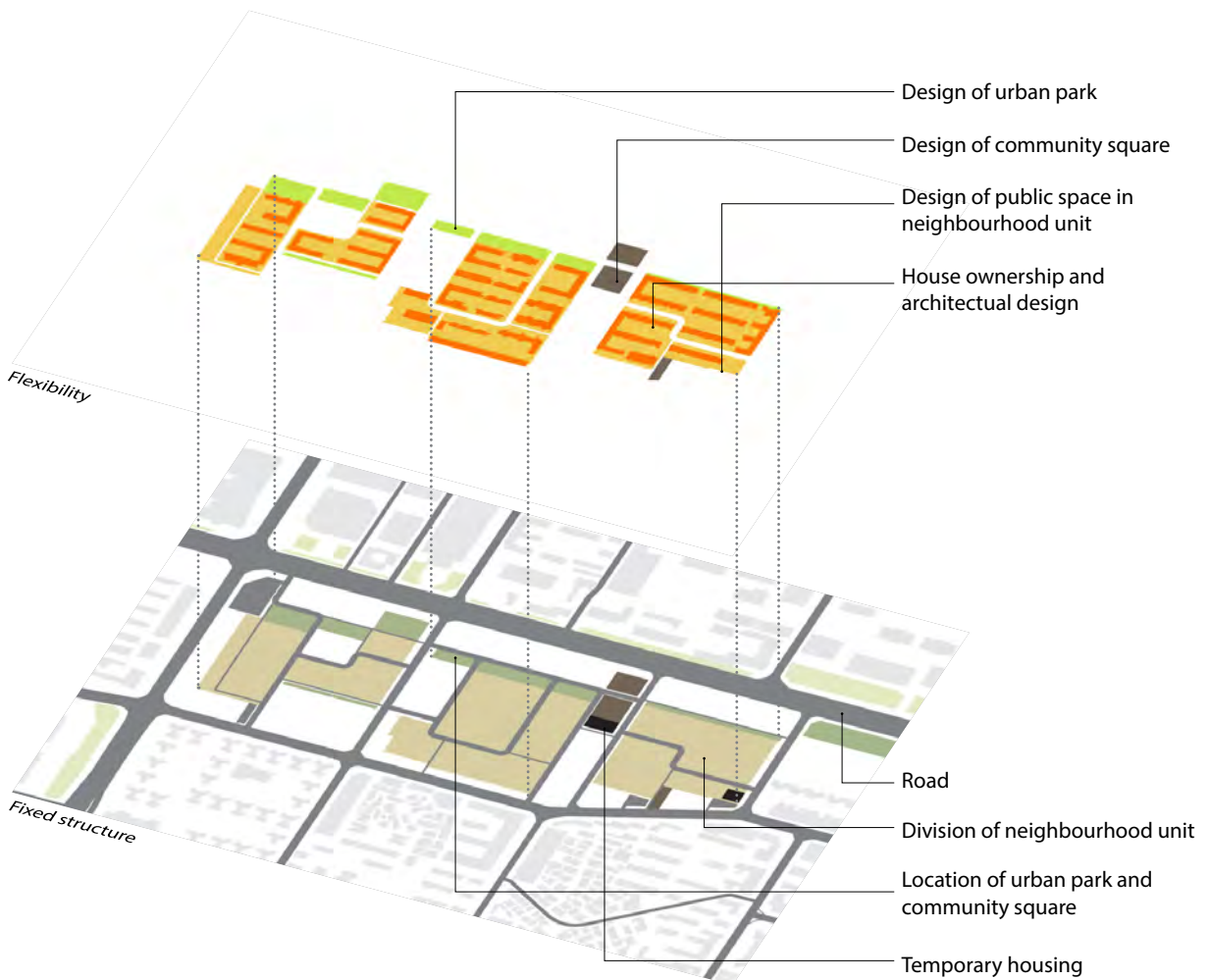


Neighbourhood unit with enclosed space

Flexibility of the plan

The intervention has presented a possible plan proposed by housing association. After that, discussion takes place between residents and housing association. The discussion topic includes the transaction of housing ownership, renewal of housing units and the design of public space in neighbourhood units. But the modification of the plan has to follow the principle of strategies.

Besides, the structure of the plan (road and division of neighbourhood unit) and some parts of the plan (urban park and community square) are unchangeable. They are fundamental to the achievement of the plan's goal.



Flexibility of the plan

Huali



(Source of photo: Google earth)

Functions

This area is a traditional residential district with diverse residential form including danwei housing, high-rise commodity housing, high-end town house and urban village. Fenghuang Road is a local commercial centre which has many restaurants, offices and shops. Small commercial nodes which serve the adjacent neighbourhoods scatter around the area. They not only provide communal service, such as health care and child care, but also have small shops satisfying residents' daily demand. Many public facilities, especially schools (a reflection of Clarence Perry's neighbourhood unit), are located inside residential. As a result, this area does not share all the functions with the city and is 'self-sufficient' to some extent.



Legend

- | | | | | | | |
|-----------------------------|--------------------------------|-------------------|---------------|---------------|--------------|--------|
| Danwei housing | Commerce and office | Public service | Urban village | Metro station | Health care | School |
| Danwei housing and commerce | Commodity housing and commerce | Commodity housing | Open space | Bus | Sport centre | |

Function



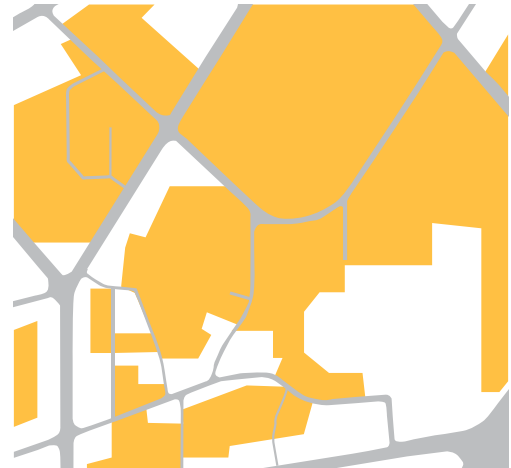
Commerce



Centres



Residence



Large scale residential area



Health care, school and sport

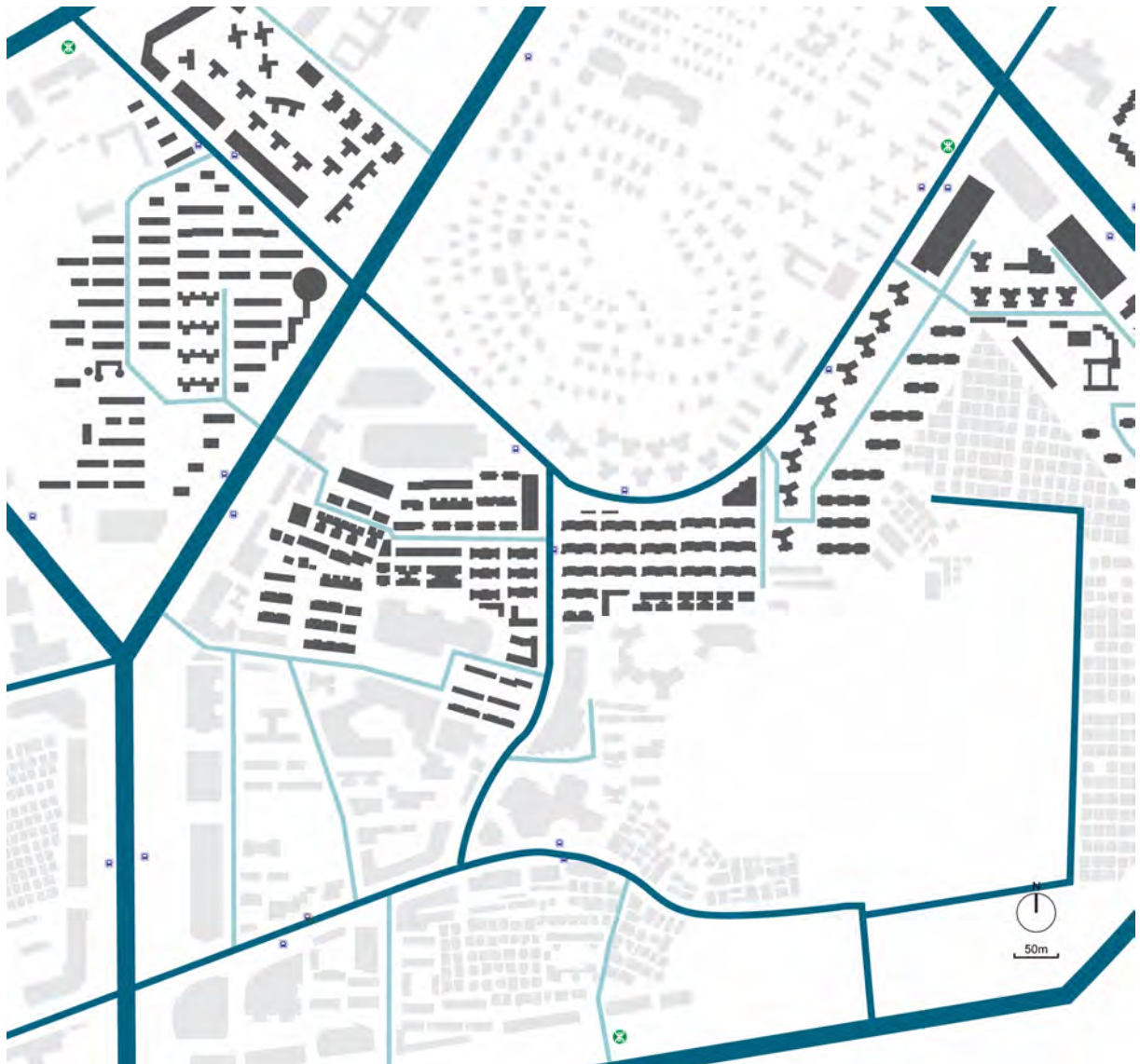


Convenient public facilities


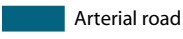
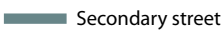

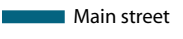
Connection

Arterial roads define the boundary of each neighbourhood. Dead-end roads stretch into neighbourhood and connecting the inner part of neighbourhood. This pattern reduces unwanted through traffic but the inner part of the block is not accessible enough.

Walking connection is not good enough because of the dead-end road. Therefore, informal connections are created. There were not much necessary supplementary functions which relates to residents' daily demand inside the neighbourhood so shopping streets emerge as well. The increasing passing and emergence of non-residential functions change the living environment and may decrease safety and spatial quality.



Legend

 Metro station	 Arterial road	 Secondary street
 Bus	 Main street	

Connection



Informal connections



Shopping street in the neighbourhood (photo by author)

Open space

Green space distributes unevenly in each neighbourhood. There is a lot of green buffer zone along arterial roads, which cannot be used. A large piece of unused green space is located nearby, which can be potential recreational zone.



Legend

- | | | | | | | |
|-----------------------------|--------------------------------|-------------------|---------------|---------------|--------------|--------|
| Danwei housing | Commerce and office | Public service | Urban village | Metro station | Health care | School |
| Danwei housing and commerce | Commodity housing and commerce | Commodity housing | Open space | Bus | Sport centre | |

Open space



Uneven distribution of green space



Playground occupied by children (photo by author)

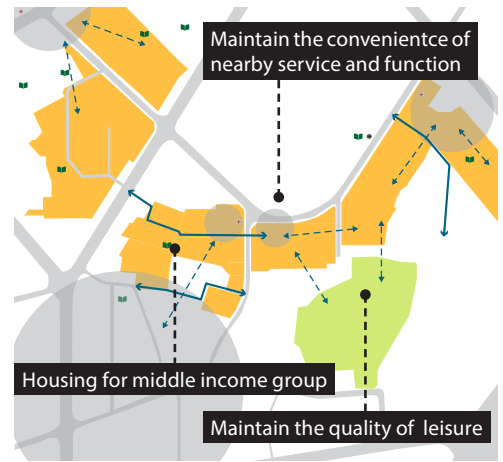


Public space of some neighbourhoods is occupied by parking (photo by author)

Aims

The neighbourhood has its own centres and necessary supplementary functions. Large scale residential area characterises this area. It has the quality of suburban life which implies a leisure living environment.

To maintain the suburban quality, it is necessary to enhance the quality and increase the area of open space. Commerce should be restricted at main streets. Accessibility needs improvement. Restructure the walking and car connection to prevent unwanted passing and strengthen the connection between centres and housing. Current residents consist of many middle and mid-low income household. The social and spatial conditions indicate that the neighbourhood can be an ideal home choice for middle and mid-low income group.



Aims



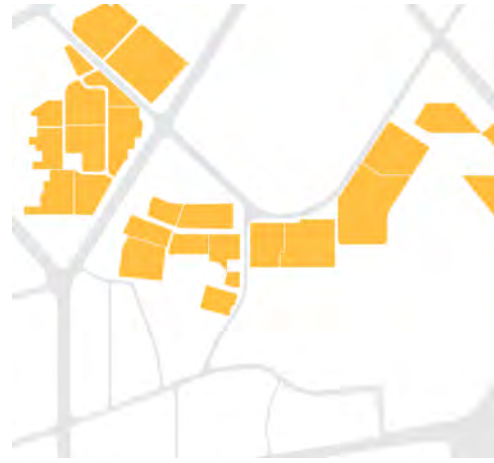
Legend

- Housing
- Commerce and housing
- Square
- Metro station
- Health care
- School
- Commerce, office, public facilities
- Green
- Road
- Bus
- Sport centre

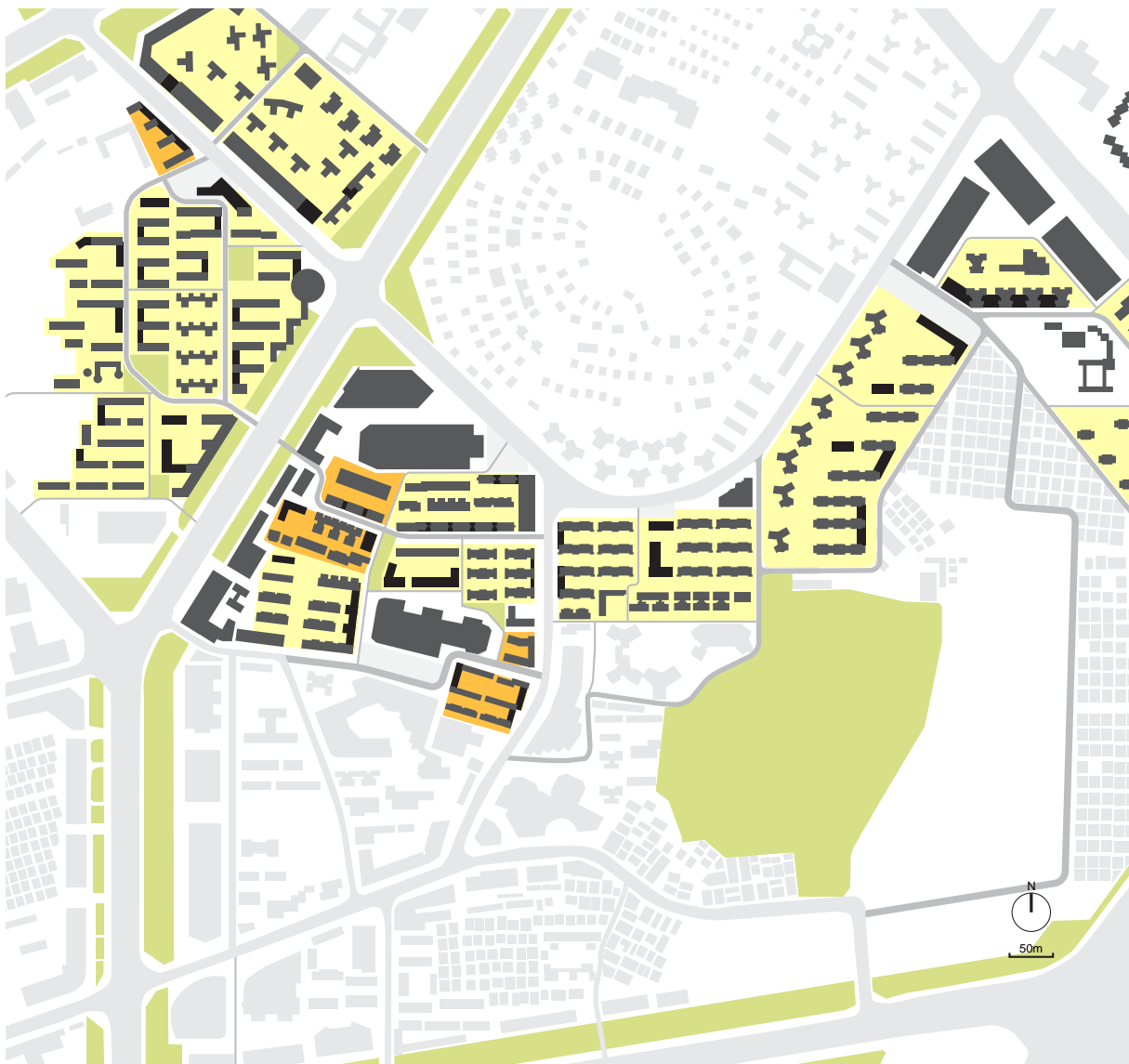
Master plan

Improve the living standard of neighbourhood








The design of neighbourhood unit follows the same principle of that in the previous site. Restructure the neighbourhood into smaller units with sense of enclosure. Each unit focuses on one income group. Phase renewal by neighbourhood unit. Demolish the buildings with low quality. Fill in-between to compensate the demolition of housing. Diversify functions on ground floor along main streets.



Neighbourhood unit



Legend

 Low-income housing	 Existing housing	 New street	 Open space
 Middle and mid-low income housing	 New housing	 Existing street	

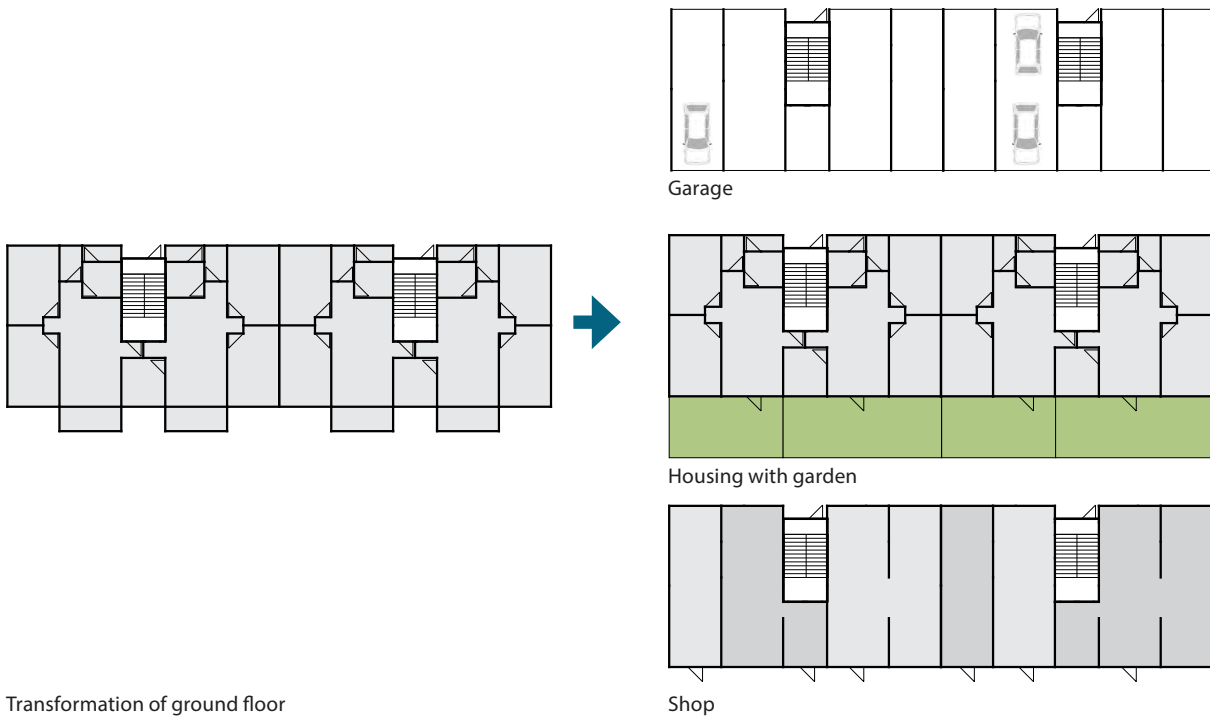
Neighbourhood unit

The difference is that here the housing typology focuses more on middle and mid-low income groups. Many of them have married or even have children. Sometimes parents also live with them. The quality of housing can be upgraded to meet their expectation for higher living quality. For instance, the original apartment can be transformed to houses with private garden.

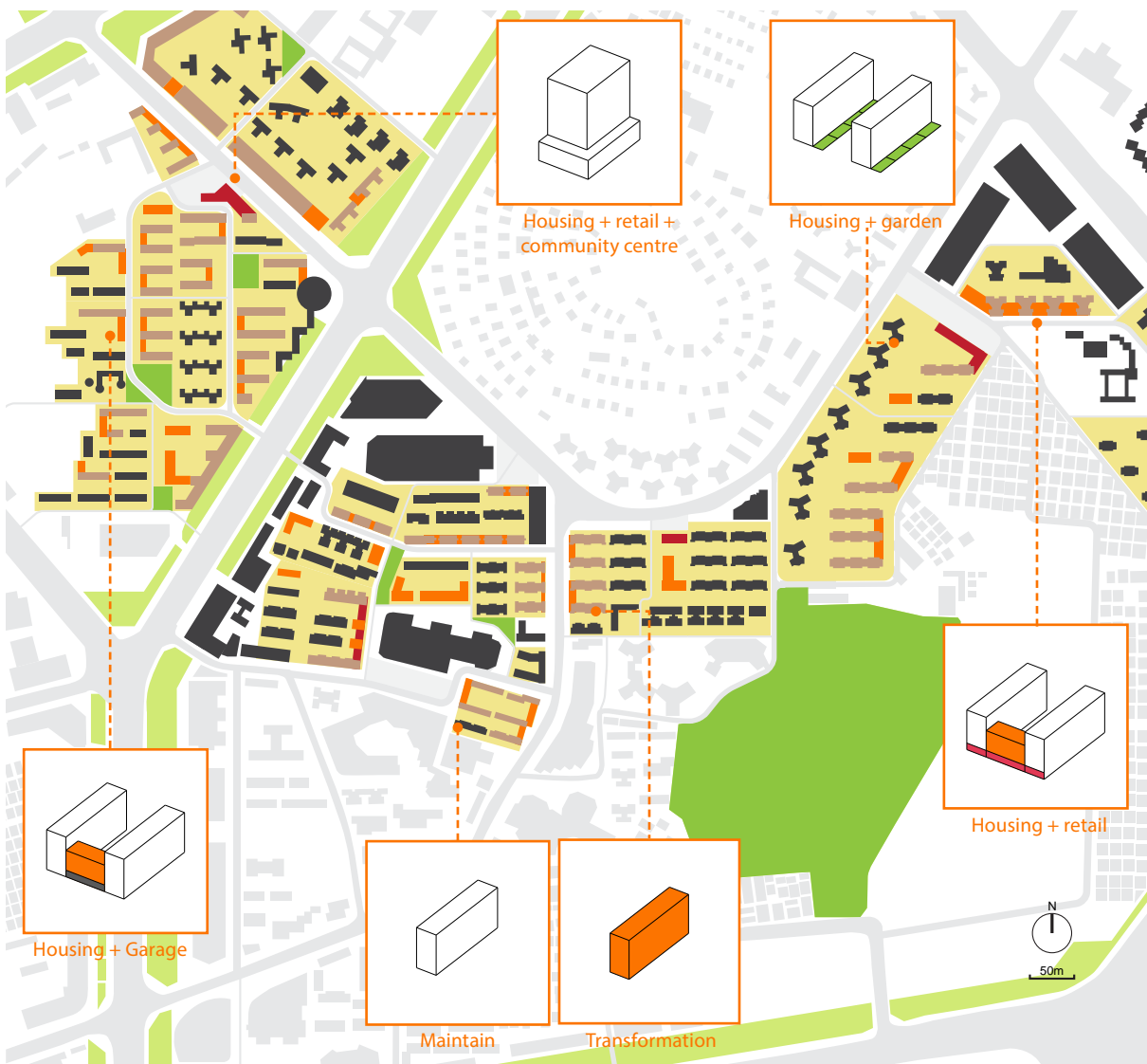
Parking can be arranged in various forms: underground, roadside and ground. The ground floor of the housing can be transformed to parking place as well.



Demolishment



Transformation of ground floor



Diversify building and housing typology

Strengthen the sense of leisure with open space

Middle income group pays more attention to environmental quality. Improvement of open space on multiple scales can greatly enhance quality in a high density residential area. Each neighbourhood has a central square, which is for both passer-by and residents. It can contain many types of programmes such as market, festival and exhibition. Central squares are located on main streets to reduce disturbance to residential area. Community parks are inserted between neighbourhood units. It is recreation zone mainly for residents. What's more, facilities for children and the elderly should be considered in open space design.



Community square



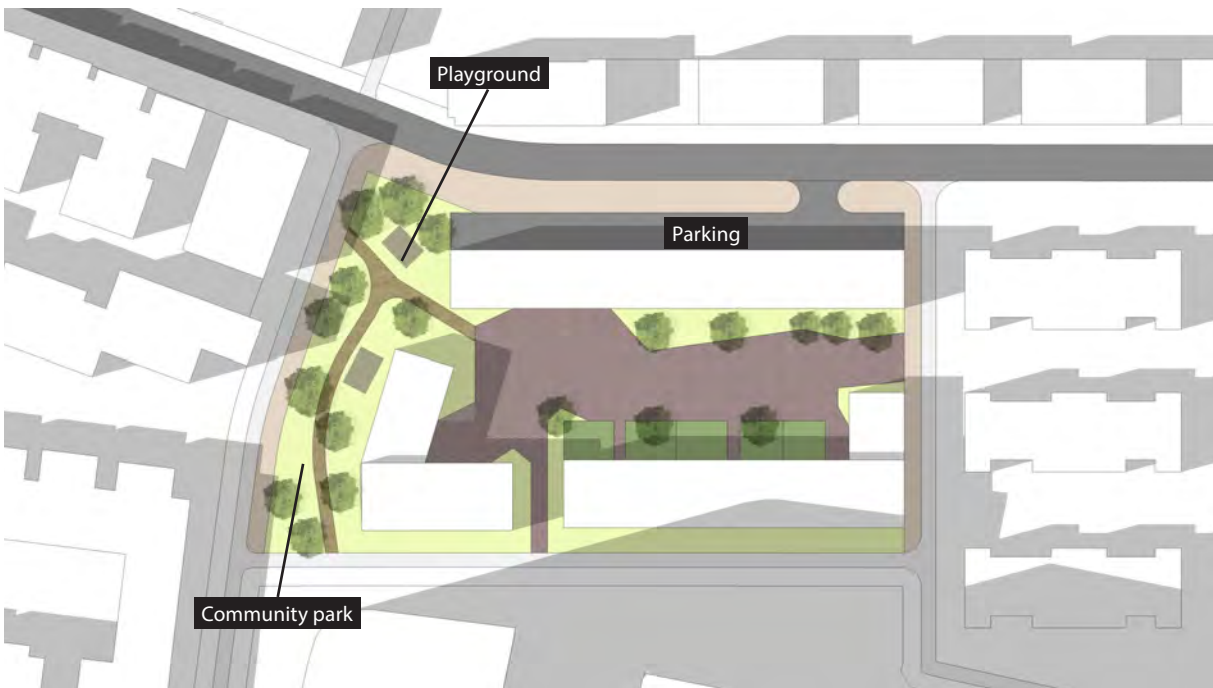
Community park



Legend

- Green buffer
- Community square
- Building
- Community park
- Neighbourhood unit

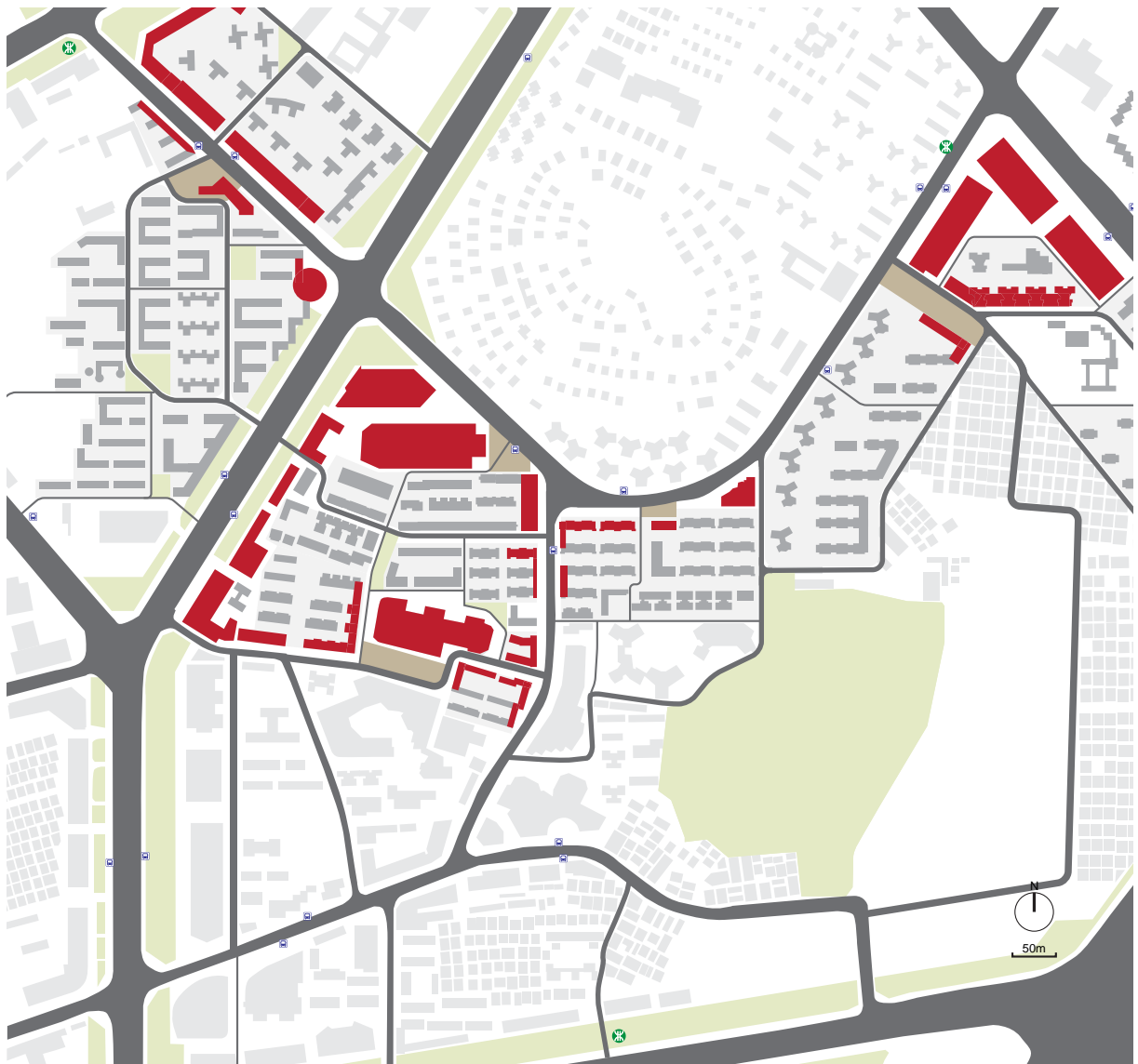
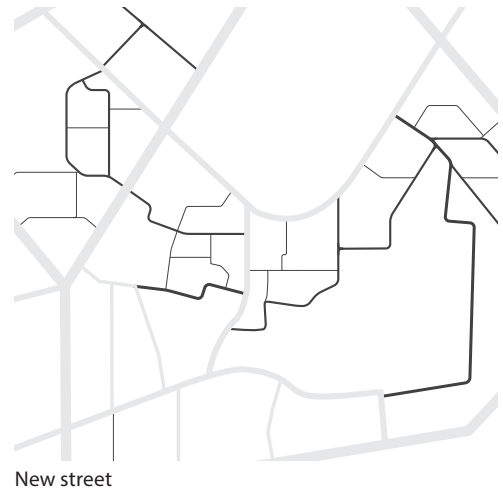
Open space



Neighbourhood unit and community park

Connecting home and nearby functions

The plan improves walking connections and secondary streets between home and functions. Secondary streets emphasize slow traffic while the walking connections are only for pedestrian and bike. Commercial activities should be limited at main streets to reduce anonymity in residential area.



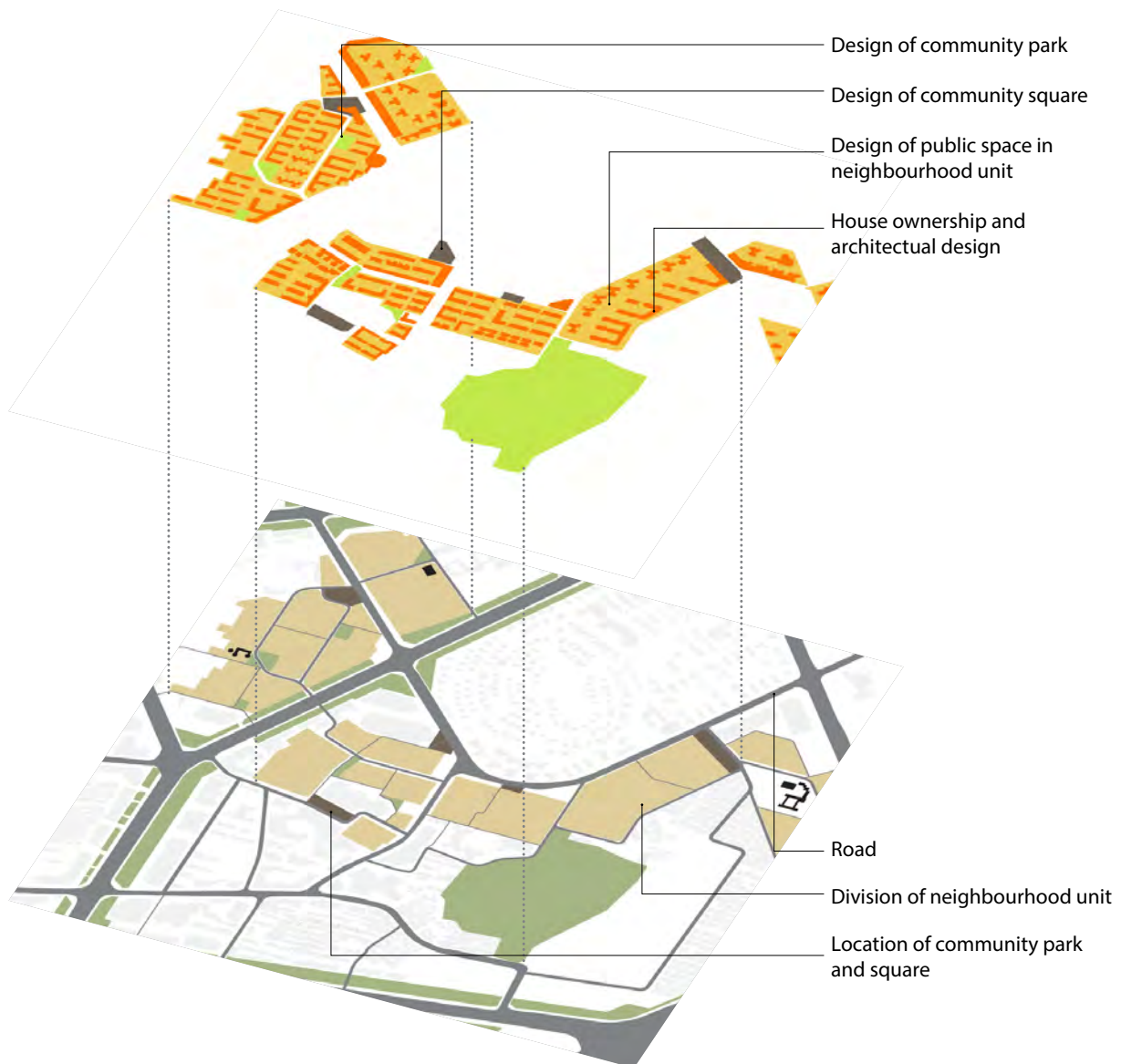
Legend

- | | | | |
|---------------|------------------|--------------------|---------------|
| Arterial road | Secondary street | Commerce | Metro station |
| Main street | Footpath | Neighbourhood unit | Bus |

Connection

Flexibility of the plan

Flexibility of the plan follows the same principle with the case of Nanyuan. The negotiable topic includes the transaction of housing ownership, renewal of housing and the design of public space in neighbourhood units. The structure of the plan (road and division of neighbourhood unit) and some parts of the plan (urban park and community square) are unchangeable.



Flexibility of the plan

10

CONCLUSION AND REFLECTION

10.1 Conclusion

Land-based development model decreases housing affordability

The project focuses on danwei housing, a kind of characteristic former public housing in Chinese cities. Danwei housing has relatively low rent or price and good location and provides affordable option for migrants who want to settle in cities. To improve competitiveness of the city, on-going urban renewal and infrastructure construction is upgrading inner city. As the socio-spatial conditions degrade, danwei housing has also become a hot spot for redevelopment. Land-based development brings great economic success but the cost is high housing price and housing affordability of disadvantaged group. Therefore, the project raises the research question: what kind of urban renewal strategies that can enhance housing affordability for disadvantaged groups and improve socio-spatial conditions of danwei housing neighbourhoods in Shenzhen as well as contribute to economic prosperity?

Enhance affordability through spatial planning and institutional design

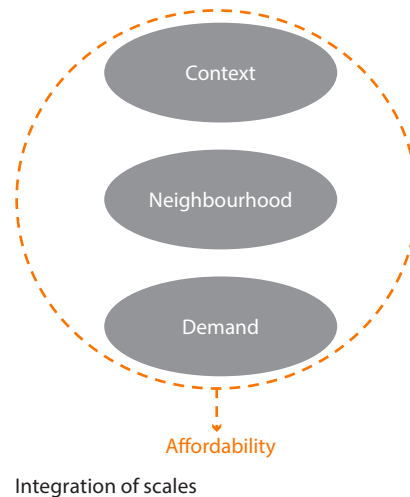
By conceptualising housing affordability in Chinese context, the project argues that affordable housing contributes to economic prosperity by accommodating low income group, one of the main contributors of Shenzhen economy. Affordable housing guarantees the accommodation for the migrants and thus ensures the supply of labour. So, housing affordability has positive effect on economy indirectly.

Another part of the question is concerned with how to enhance housing affordability. First of all, a decent living condition is one of the central issues of housing affordability. Though high quality of living environment may increase price, emphasis on residents' urgent need can limit the rise of price generated from environmental improvement. Besides the disadvantaged group, affordable housing is concerned with the others. Homogeneity in a neighbourhood may harm disadvantaged group's opportunity of self-enhancement. As a result, the improvement of living condition should be based on different groups' demand. In China, low-income group pays more attention to work and work-related issue while middle and mid-low income group has higher expectation on good life quality. Second, institution facilitate disadvantaged group to obtain decent housing. There has formed a consensus that partnership between public and private sectors is necessary to solve housing problem. A successful partnership should not only create incentives for private sector but also maintain government's social commitment.

Interpret socio-spatial and institutional condition of danwei housing

Contexts where danwei housing neighbourhoods are located vary. Several criteria, which include centrality, accessibility, convenience of public facilities and accessibility of open space, help to interpret the relation between contexts and residents' demands. When we analyse a particular danwei housing neighbourhood, these criteria position it and form the foundation for spatial intervention.

Despite the difference of contexts, danwei housing has similar spatial design because of the influence of Clarence Perry's neighbourhood unit. The design principles of danwei housing neighbourhood reflect the concept of neighbourhood unit and respond to Chinese reality. The design seemed quite desirable in the past. However, as the social condition changes and economic grows, it has turned outdated and can no longer satisfy the new demand.



Institutional condition has great impact on danwei housing. Housing reform starting from 1980s radically changed the public housing policy which had lasted since the foundation of socialist China. Over-marketization of housing stock threatens the interest of those who are unable to get decent housing in free market. The management of danwei housing is driven by a top-down governance structure. It cannot effectively satisfy residents' need and represent their interest.

A new renewal model

The degrading socio-spatial conditions of danwei housing in Shenzhen result in profit-oriented redevelopment which do harm to housing affordability. The project proposes several strategies to replace the current redevelopment model with a new one that emphasises affordability as well as liveability. Based on the strategies, a new transformation model is proposed. Housing association is established to guarantee affordability as the goal of renewal. Clarification of ownership and responsibility can reduce conflict and keep the quality of neighbourhood environment after completion. Community participation reflects residents' demand into the plan so that the renewal can really benefit the residents.

The spatial renewal plan is based on contexts and strategy. The spatial transformation consists of two clues: difference and sameness. On urban scale, the diverse contexts of danwei housing lead to different spatial structures for renewal. On human scale, the design of public space and housing typology inherits such difference. The reason is that contexts provide some qualities which people demand for. The principles to transform neighbourhoods are the same because the design of danwei housing follows the same concept.

Integration of scales facilitates affordability

Danwei housing neighbourhoods are shaped by the homogeneous spatial layout. It is a disadvantage and advantage as well. The advantage is that the homogeneity provides enormous potential for upgrade, compared to the prevailing private housing which has strong identity and cannot be transformed with an adaptive model. Instead of replacing danwei housing with the typical private housing, transformation can keep the neighbourhood adaptive.

The disadvantage is the contradiction with the diverse contexts. The project aims at an adaptive model that improves affordability and maintains certain level of liveability. To be specific, the model diversifies the homogeneous spatial layout of neighbourhood. The design of neighbourhood has to cooperate with contexts and reflect the demands. Therefore, there is internal link between scales: urban scale (contexts), neighbourhood scale and human scale (demand). Affordability, as an inextricable term, is concerned with both housing and non-housing issues, which embody on various scales. Only when scales are considered coherently can affordability be achieved as a quality of housing.

10.2 Reflection

The central issue of this research project is affordability, which has provoked wide-spread discussion in China. My project argues that housing affordability is not only about economic aspect but also liveability. In this reflection, I will state some thoughts evoked by the studio, the social relevance of the topic 'housing affordability', the process and methodology of research.

The studio Complex Cities and Regions in Transformation which I take part in sees the contemporary cities in a different way. Cities nowadays are more embedded in regional and global network and are much more complex than before. Also, it focuses on cities during transformation. One of the themes of the studio is the metropolitan spatial structure. Shenzhen is one of the best research objects. The development of the city is guided by international perspective. The city which has created a miracle of fast growing is still developing rapidly. As a local of Shenzhen, I am provided an absolutely different perspective by the studio to rediscover the city which I am too familiar with.

The reason that I choose danwei housing as my research focus lies in that it is a type of agglomeration with strong Chinese features. It has existed since the establishment of the socialist China. It witnesses the history of Shenzhen from the very beginning of SEZ and develops together with the city. The transformation of danwei housing neighbourhood reflects the change of Chinese housing policy and housing ethic (from welfare to commodity). However, as a product of socialistic period, danwei housing can hardly suit the political and ethical changes. Moreover, the context on which danwei housing is based has changed. Migrant group emerges. Intense urban renewal upgrades inner city. Infrastructure fever reflects government's international perspective. This project aims to explore the possibility of danwei housing, a kind of old-style residential area, in such a time of transformation. Recognition of complexity of city and spatial process (instead of an individual state) does help me to analyse urban issues on a higher level.

As the housing price rocketing, housing affordability becomes one of the most popular topics in China. The project tries to find out how danwei housing should respond to that by means of reviewing the term 'affordability'. Affordability inextricably links with other aspects such as institution and living environment. With literature review, I realize that affordable housing is not simply about cheap housing for low-income recipients. If we see from the view of complexity and process, it is necessary to involve much more to sustain a certain state ('housing affordability' in this project). For example, the low income group, usually the migrants, regard job as the most important issue. This has great impact when they choose homes. The social reality of China has its own characteristics. What housing affordability implies in China is different with that in Netherlands. Therefore, connotation suggested by a term is usually context specific. The project has taken account of the social reality of China and makes it the foundation of the theoretical framework.

In the project, design plays a role as explanation of the research conclusion. After clarification of the term 'housing affordability', the project continues with socio-spatial and institutional analysis. Five strategies are the products of analysis. However, the analysis is based on a certain type of agglomeration (danwei housing neighbourhood in this project) which has similar characteristics. The context of particular individual is excluded from the analysis. So, I select two neighbourhoods situated in different context and apply the strategies. The same strategies result in similar small scale

intervention, but lead to different structural modification on larger scale because of different context.

Finally, the most remarkable reflection for me is that research or design process is non-linear. One has to always go back and forth between steps to improve the story line of the project. In my opinion, the reason lies in that reverse thinking can sometimes reveal what normal thinking may neglect. The project has almost completed, but anytime when I look back new understanding always appear. Perhaps one day in the future I will continue this project.

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APENDIX

Huali

Huali West

Completion year: 1993
FAR: 2
Green ration: 30%
Household: 860
Parking: 220

Shipin

Completion year: 1990
Green ration: 15%



Huali East

Completion year: 1986
FAR: 2
Green ration: 15%
Household: 800
Parking: 180

Huashen

Completion year: 1988



Dayuan



Connection



Public space



Function

Nanyuan

Nanyuan New Village

Completion year: 1995
 FAR: 1.95
 Green ration: 10%

Parking: 70

Zhongdian

Completion year: 1992
 Greening rate: 30%

Aihua

Completion year: 1980
 FAR: 1.4
 Greening rate: 12%
 Household: 673

Saige

Completion year: 1986
 FAR: 3.85
 Greening rate: 35%
 Household: 553



Dayuan



Connection



Public space



Function

Mutoulong

Completion year: 1984

FAR: 1.1

Greening rate: 30%



Dayuan



Connection



Public space



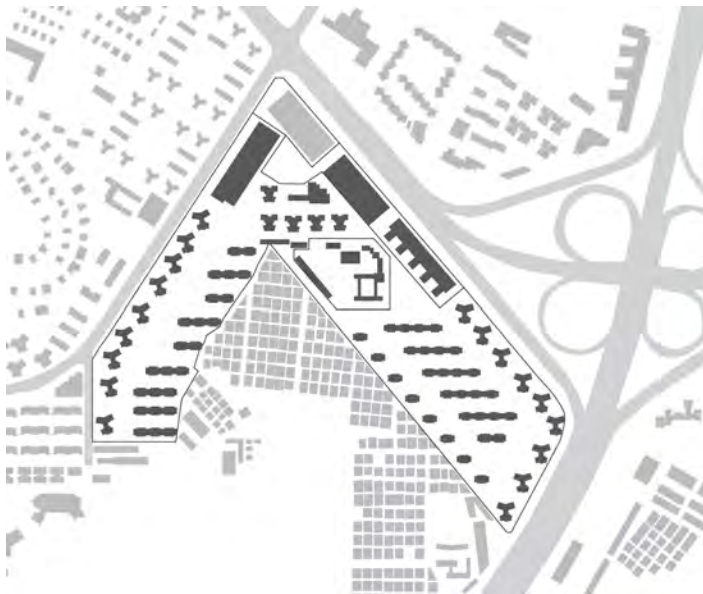
Function

Jingbeinan

Completion year: 1985

FAR: 1

Greening rate: 40%



Dayuan



Connection



Public space



Function

Yuanling

Completion year: 1982

FAR: 1.3

Greening rate: 40%

Household: 3051

Parking: 500



Dayuan



Connection



Public space



Function