

Towards a walkable city: the planning practice of Shenzhen, China

1. Background and introduction to the case

1.1 The development history of Shenzhen

Shenzhen, a new mega city born and growing under China's open-door policy, has experienced dramatic urban development in the past thirty years. As a former fishing village before the 1980s', Shenzhen owed its successful urban achievement mainly to the locational advantage as next to Hong Kong, a global city developed into Asia's financial centre in the British colonial period. As an 'open city' designated to inaugurate relations and interactions with the outside world, Shenzhen has been influenced by the capitalist world's development traditions during its short but significant development history. The introduction of marketization in urban development has enabled the city to attract investment and capital for all kinds of economic activities. It also urged Shenzhen to get as much as possible profit in order to develop into a big city as earlier as possible.

Rapid urbanization became the key characteristics of the city. The population number in Shenzhen has increased from less than 30 thousand to more than 10 million, in no more than thirty years. Therefore the Shenzhen people have regarded the efficiency of urban system as the key to the city's success. Even as well known to the whole country, a phrase 'Shenzhen speed' has once been quite popular to visualize the city's rapid and effective economic development and construction of roads, buildings, infrastructures, as well as the overall urban physical environment. Under this circumstance, in Shenzhen a car-oriented tradition has been fostered because people always believe in the idea that a well-established transport system for vehicles will improve the city's efficiency. Therefore, Shenzhen has been planned to grow along a traffic corridor, the Shennan Avenue, with other carefully designed and hierarchical highways to facilitate and to maximize the use of cars. In this way, the city has been planned and developed to satisfy car users, whilst with much less regard paid to pedestrian and bicycle users.

1.2 The lack of consideration on sustainability and humanity

Although Shenzhen has made magnificent economic success, at the same time the city is confronted with some severe problems, among which environmental challenge is regarded as one of the main problems Shenzhen has to face in the following years. With the increasing number of private car ownership, the city has gradually suffered from exhaust emission of vehicles. The air pollution, which is partly caused by the uncontrolled use of cars, has blurred the once blue sky of the city. The official data shows that in Shenzhen, there was 177 days with dust haze in the year of 2004, almost ten times more than that in the 1980s. (Guangdong provincial weather authority, 2007) Also according to the official resource (Shenzhen Transport Bureau, 2000-2005), the growth of Shenzhen's car ownership has reached an annual increase of more than 20%, much higher than the growth of road capacity. That explains why today traffic jam is more and more frequent in Shenzhen's urban area. If the

situation gets worse, Shenzhen will no longer sustain its advantage in efficient urban system. Meanwhile, the lack of consideration on human-scale activity had led into the lack of characteristics of the city. As a result, humanity is being ignored subjectively or objectively in the planning and designing of our living and working space. In such a car-dominant city, people would have less and less choice to experience the daily life on foot.

1.3 Introduction of a city-wide pedestrian system

In the recent years, with the increased attention paid to the sustainability issues and the rise of 'low carbon' economy, both the authority and the people in Shenzhen have been aware of the importance of pedestrian environment. Based on the reconsideration on the previous development of Shenzhen, the municipal government decided to launch a study to plan for a city-wide pedestrian system, which is expected to improve the pedestrian environment of Shenzhen in line with the encouragement of 'people-oriented' principle, the facilitation of low-carbon economic environment, and the promotion of sustainable development.¹

The significance of the Shenzhen pedestrian system plan may lie in the following aspects. First of all, it is an innovative approach for planning study as the first city-wide pedestrian plan in the country. Secondly, in spite of the uniqueness of the project, the plan is stipulated under the existing planning system of Shenzhen. To be more specific, it will serve the function as a 'special plan', which is proposed to focus the planning effort on a special urban system. Thirdly, the feasibility of implementing the plan has been highlighted in the study. In other words, it will be implemented with the same statutory power as the other urban plans.

2. Conceptual framework of the plan

2.1 Concept and international practice

It is necessary to understand the principles for the establishment of a successful and attractive pedestrian-friendly environment at the beginning of the project. According to Gehl (2004), by the introduction of good pedestrian environment, public space would supplement the private life spheres with a well-functioning public domain, inviting people to walk more and stay longer, offering a wide range of attractive public activities. Providing quality, lively open space where people feel happy to wander, linger and rest will encourage people to socialize more in public places. Hence a good pedestrian environment as a public space should be able to (1) create a better balance between vehicular traffic, pedestrians and cyclists; (2) improve conditions for walking and cycling; (3) improve conditions for resting and simply passing time; (4) upgrade the visual quality of the streetscape; (5) promote a shift in mind-sets towards a more people-orientated city culture.

According to the above principles, in the Shenzhen pedestrian project the city has been simplified and conceptualized as divided into several 'pedestrian units' with different kinds of urban functions. The concept of the plan is to provide a network to facilitate the pedestrian connection between and throughout these 'units'. As illustrated in figure 1, grids with different colors represent the urban blocks with various uses, like residential, commercial, industrial,

and so forth. Through the pedestrian network in between the urban blocks (as red and green lines in the figure), people are able to enjoy a generally city-wide walking and cycling experience.

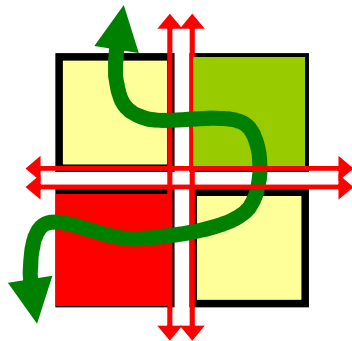


Figure 1. Concept of 'pedestrian units' in the Shenzhen Pedestrian Plan
(Drawn by the author)

The pedestrian network is also the main object for planning. By improving the continuity and the physical condition of the network under planning and design control, it is expected to enhance the pedestrian environment in terms of accessibility, permeability, connectivity, and vitality.

Meanwhile, some international experience on the improvement of pedestrian environment and the promotion of pedestrian-friendly urban planning and development has been reviewed in this project. The study has referred to some well-known pedestrian-friendly cities like Copenhagen, Venice and Strasbourg. Their experience on the creation and maintenance of public spaces, the

encouragement of public transport, the support to car-free redevelopment, and so on, all shed light on the exploration of Shenzhen towards a walkable city. In addition, there have been many efforts in various forms like plans, official instruction, planning guidance, and design guide, for example, the *Causeway Bay pedestrian plan* in Hong Kong (PDHK, 2004), the *Portland Pedestrian Master Plan* accompanied with *pedestrian design guide* issued by the Portland Office of Transport (1998), and the *recommended guidelines/priorities for sidewalks and walkways* issued by the Federal Highway Administration (2000).

2.2 Target of the Shenzhen pedestrian system plan

By referring to the above principles, concept and precedents and taking into consideration the current situation and challenges of Shenzhen, the plan sets a clear target for the city in pursuit of a comprehensive, integrative and feasible pedestrian system. It is aimed at the establishment of a walkable city guided by the pedestrian plan, which is expected to provide safe, convenient, comfortable and beautiful pedestrian environment towards a green, healthy, sustainable, and livable Shenzhen. To achieve this target, a planning outline has been structured to organize the stipulation of plan and corresponding policy and guidance, which focus on the improvement of pedestrian environment by various planning methods.

Following the planning outline and in line with the concept of 'pedestrian unit', the plan consists of three main sections, including:

- (1) the spatial strategy to support a well-organized network connecting different pedestrian units;
- (2) the development control to promote good pedestrian environment in each unit; and
- (3) the design guidance to encourage comfortable and walkable pedestrian facilities as general standard for all the units.

2.3 Methodology

Before the plan stipulation, it is essential for the planners to understand the context of existing pedestrian environment and the motivation for people to walk. Therefore field visits had been undertaken by taking into investigation the pedestrian behavior in different areas in Shenzhen. At the same time the people's psychological feeling at pedestrian environment was also examined by interviews and questionnaires. Through the field visits, first of all, some important spatial and local elements can be identified. For instance, the nature resource (mountains, riverside, and coastline) in Shenzhen can provide long-distance walking and cycling routes for leisure purpose. Secondly, different places with different pedestrian behavior in relation to the location, land use, building forms, and other factors have been classified. For example, the pedestrian in residential areas might pay more attention to the landscape quality than those in industrial areas. Thirdly, the key advantages and critical problems to the improvement of pedestrian environment in different areas are also identified and classified. The advantages might include the location next to public transportation and the attractive nature environment, while the problems might include the lack of facilities for the disables in public places or the commercial street being too narrow.

The figure below shows an example of the result of the field-visit investigation. It reveals the information derived from an office area. The information, including generation points, pedestrian volume, main pedestrian paths, important public space, and so forth, has been collected and mapped for analysis.

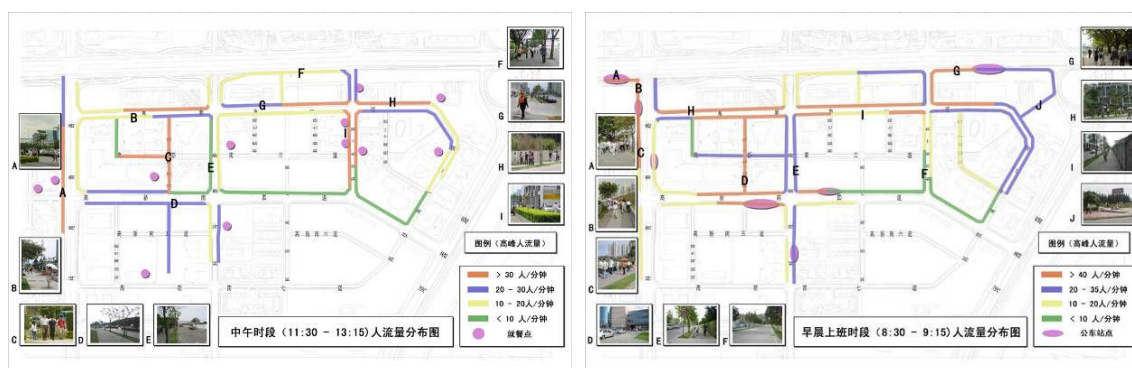


Figure 2. Pedestrian information in different period (source: UPIDS, 2006)

Based on the investigation covering most urban areas in Shenzhen, the pedestrian plan is supported by sufficient baseline materials to carry out in-depth planning study in line with the structured planning outline. Furthermore, as the main outcome of the plan, the three sections of the plan are focused on city-wide level, district level, and local detailed level respectively, which will be briefly introduced in the following part.

3. The Shenzhen Pedestrian System Plan

3.1 Pedestrian network

First of all, the city territory has been divided into three zones. They are green zone, which refers to the north mountain area; orange zone, which refers to the central urban area; and blue zone, which refers to the south coastal area. In different zones, there are separate planning policies to support different kinds of pedestrian activities. In green zone where hiking in the mountains might be the main pedestrian activity, the planning policy pays attention to the enhancement of certain tourist facilities and the linkages between country parks and those facilities. In orange zone where daily pedestrian activity concentrates and pedestrian system is most frequently used, the planning policy aims at the facilitation of quick and convenient pedestrian access to public transport. In blue zone which is similar to green zone in terms of pedestrian behavior, focus is placed on the pedestrian connection between waterfront area and urban area.

In accord with the city's comprehensive plan and development strategy, the pedestrian plan proposes several pedestrian corridors, in which people are facilitated and encouraged to experience different kinds of walking and cycling. The corridors can be classified into two categories. One (as shown below left) makes full use of the existing hill paths, riversides, and urban green corridors as paths to get across the three pedestrian zones, through which pedestrian activity can penetrate to both urban and nature environments. The other one (as shown below right) are mainly within the urban area to connect different pedestrian units. Most of them are aligned to the main roads of the city. For the earlier one, the planning policy is to sustain the continuity of the paths. For the later one, emphasis is placed on the improvement of sidewalks and the accessibility to the nearby urban blocks.

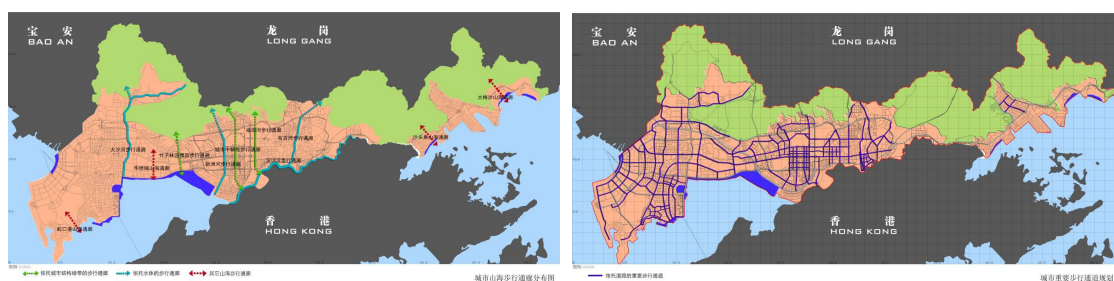


Figure 3. Pedestrian zones and corridors (source: UPIDS, 2006)

3.2 Development control in pedestrian units

As introduced in the earlier section, the Shenzhen pedestrian plan is proposed under the existing statutory planning system. According to Lin et al (1994), Outline Zoning Plan in Shenzhen is the statutory plan that specifies land uses, transportation system and development intensities. The statutory plan forms the basis to exercise legal power relating to development control. A special plan like the Shenzhen pedestrian plan would not be feasible and implementable without regard to the statutory planning institution. Therefore in this project

the pedestrian units have been designed to match with the statutory planning standard units, as shown in figure 4.

According to the land use, local characteristics, main pedestrian behavior, internal and external transport linkages, and other conditions of the units, they have been classified into eight categories, for example, the urban-centre area unit, the residential unit, and the GIC (government, institution and community) unit. Based on the field investigation and desk study, the plan outlines categories of control policy and guideline to regulate the pedestrian-related development activities in each type of unit. Taking the residential unit as an example, it is important to address the safety issue of the pedestrian system. Hence the improvement of pedestrian crossing and the introduction of traffic-calming approaches are highlighted for the unit. Meanwhile in GIC units where there is large scale of open space, the encouragement of human-scale design is one of the key considerations of planning control.

Furthermore, some important pedestrian units are identified as 'special pedestrian areas', where pedestrian activity is more intensive and diversified than that in other areas. Most of the special pedestrian areas are urban centres, commercial districts or office areas, with huge amount of pedestrian volume. In these units, more specific development control is needed in response to the complicated situations.

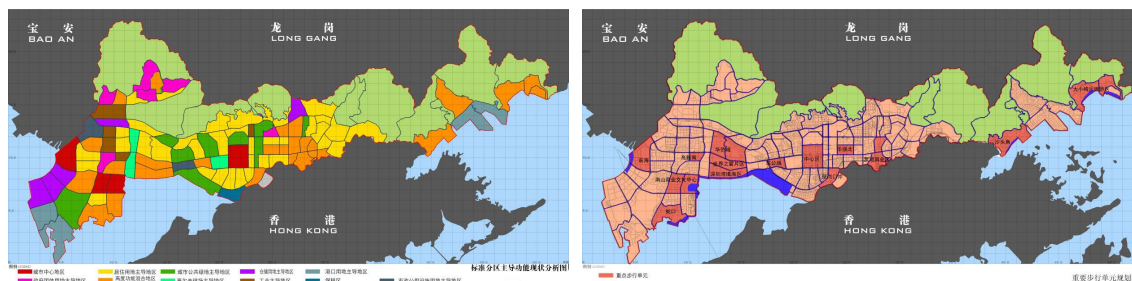


Figure 4. Pedestrian units in line with statutory planning standard units (source: UPIDS, 2006)

By using the same example in the earlier section of this paper, the following figure shows the pedestrian development control in an office area as a 'special pedestrian area'. The main pedestrian generation points, the key pedestrian paths, some important public spaces and pedestrian-attractive points are identified in the development control map. Accordingly, planning and design ordinance is addressed to specify what detailed approaches should be carried out to facilitate, organize and upgrade the pedestrian network and to improve the pedestrian environment.

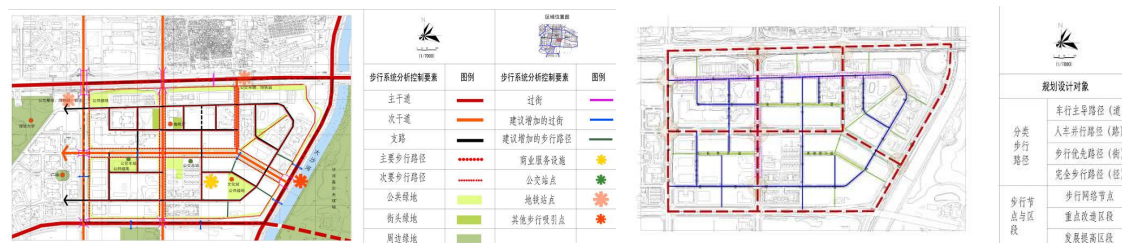


Figure 5. Pedestrian-related development control in an office area (source: UPIDS, 2006)

Some clauses of planning and design regulation accompanied with the map are given below as a case of the pedestrian-related development control in this area: ²

- (1) for the car-dominant paths (road A and B), clear signals should be placed at certain intersections to remind car drivers to pay attention to the pedestrian crossing; at the same time signals leading to the metro station are also needed;
- (2) for the pedestrian-first paths (road C, D and Street E), the width of sidewalks should be wide enough, and the reduction of parking plots along the path should be considerable;
- (3) for the full pedestrian paths (street F and G), detailed landscape design is needed to improve the quality of pedestrian environment;
- (4) for the pedestrian generation points (metro station H and two bus stops I and J), convenient pedestrian linkages should be provided;
- (5) for the open space (waterfront plaza K), the connection with the pedestrian paths needs to be carefully designed, which is expected to provide more convenient access for the pedestrian to the waterfront area.

3.3 Design guidance for pedestrian facilities

To standardize the improvement of pedestrian environment in pedestrian units, it is suggested in the plan to introduce a set of design guidance which provides direction to design professionals, developers, municipalities and others regarding the design, construction, and maintenance of pedestrian facilities. According to the international practice (GDT, 2003), there are ten aspects of the design guidance for pedestrian facilities, including: (1) general design guidelines; (2) accessibility; (3) trail and pathways; (4) sidewalks and walkways; (5) intersections; (6) crossings; (7) traffic calming; (8) pedestrian access to transit; (9) site design for pedestrian; and (10) other related issues.

Following this structure and taking into consideration the characteristics, the need and the reality of Shenzhen, it is in the plan to stress the efforts on the improvement of existing pedestrian facilities. For instance in Shenzhen, along the arterial roads there are wide sideways which are generally long, empty and monotonous without regard to the feeling of pedestrian. Therefore, the corresponding design guidance targets at the provision of more diversified and interesting space to regain the human care on the sideways, such as to support the addition of street furniture, to encourage shops open to the main pedestrian paths in certain areas, to free some road space for cycling, and so forth.

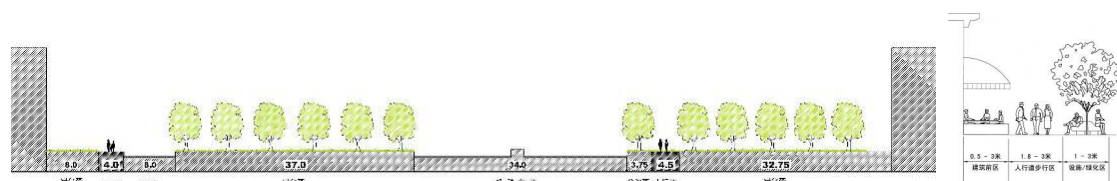


Figure 6. Illustrations to explain the design guidance (source: UPIDS, 2006)

4. Implementation and revaluation

4.1 Actions plans

To implement the pedestrian plan, a series of actions are proposed in identified areas. Different efforts are planned to support the planning strategy, development control and design guidance for the pedestrian system. First of all at the city-wide level, several important places within the pedestrian corridors are proposed with detailed schemes, which are expected to initiate the improvement for all corridors. Secondly at the district level, some pedestrian areas are identified for action planning. Some of them are in development or redevelopment, which provide a good opportunity to implement the pedestrian-related development control. Some in the city's central position however in poor pedestrian condition are in great need of urgent actions to change their negative images. Thirdly at street level, it is proposed to renew the pedestrian facilities in some important full pedestrian areas and gateway or nodal areas.

Moreover, to coincide with the promotion of outdoor activity, some hiking and middle-distance travelling routes are planned for improvement actions, for example, the Shennan avenue urban sightseeing route, the Shenzhen Bay fifteen-kilometers coastal hiking route, and the Bijia Mountain hiking route. These routes will heavily rely on the pedestrian environment throughout them. By the facilitation of pedestrian action plans, these special routes will act as a landmark not only improving the quality of life of every citizen, but also proclaiming Shenzhen's pursuit of healthy and sustainable living style.

4.2 Detailed pedestrian planning

The Shenzhen pedestrian system plan only outlines a comprehensive framework with basic principles and guidelines to direct the pedestrian-related development. In other words, more in-depth planning efforts have to be done to realize this comprehensive blueprint. Therefore, it is suggested in the plan that in the future, the subsequent detailed pedestrian planning should be initiated in each district of the city. The content of the detailed pedestrian planning might be different from the comprehensive plan and more attention should be paid to local characteristics and realistic problems.

In addition, the detailed pedestrian planning is encouraged to take into consideration some other planning efforts in relation to the development of pedestrian system, such as the planning for open-space system and green-space system. Only by supplement with each other, can these planning efforts be able to contribute to a holistic attempt towards Shenzhen's pursuit of sustainable urban development.

4.3 Revaluation of the plan

The Shenzhen Pedestrian Plan has been implemented for about three years, a long enough time to objectively review and reevaluate the plan and take into examination its effectiveness, weakness and limitation. Above all, after the promulgation of the plan, there is a consensus-

-building on the development of Shenzhen's pedestrian system. Not only does the government prepare to invest more on the development of pedestrian network, but also do the general citizens understand the benefits and importance of good pedestrian environment. With the help of the media and official or non-official organizations and via different forms of public education and public communication, the thinking and concept of this project on pedestrian-priority and the promotion of pedestrian system have been widely diffused.

Also along with the implementation of the action plans, the physical pedestrian environment in some areas has been dramatically improved. Many sideways and walkways have been redesigned or redecorated. The addition of street furniture, pedestrian waiting and crossing facilities and bicycle lanes along the Shennan Avenue is a quite good example. Moreover, some district administrative authority like the Guangming New Town Authority has proposed to launch detailed pedestrian planning to further the efforts at district level. By the initiation of more and more specific work on the planning and development of pedestrian system, the experience gained from the working process will continuously contribute to Shenzhen's subsequent efforts towards a walkable city.



Figure 7. Sidewalks improvement in Shenzhen

Although the outcome of Shenzhen pedestrian system plan has to a certain degree met the originally set target, there are still some unavoidable problems confronting the implementation of the plan. On the one hand, due to the lack of time and resource in this project, only some important areas are selected as samples for detailed study, which results in the impractical implementation in some areas. In other words, the plan in fact is not possible to be accurately 'comprehensive'. On the other hand, although the plan was stipulated and implemented under the existing statutory planning institution, it is still a 'special plan' rather than a formal section of the statutory planning system, which eventually leads to the relatively weak enforcement of the plan. Therefore many planners especially the participants of this project suggested that from a long-term perspective, the pedestrian-related development control approach should acts as a part of the statutory plan, in the form of urban design policy and put together with the other statutory planning ordinance.

5. Concluding remarks

Shenzhen, a planned new city with the original idea to develop into the window of China, is a typical representation of the country. The rapid urbanization process of Shenzhen has mirrored the rise of China. With the incremental awareness on the importance of

environmental protection and the need for sustainability in recent years, the rise of low carbon economy and the promotion of sustainable development as world-wide trend have given Shenzhen the opportunity to reconsider its rapid but rough urbanization in the past thirty years. Although confronted with serious environmental problems mainly caused by the rapid development, Shenzhen does not turn a blind eye to the problems. Instead, it chooses to reconsider the development of the last thirty years which has overstressed economic aspects and tries to explore a new way towards sustainability. As one of the efforts in pursuit of low-carbon and sustainable urban development, the Shenzhen pedestrian system plan was introduced to reduce the use of car and to create a comfortable environment for walking and living.

Based on the concept of 'pedestrian unit', hierarchical efforts are proposed in the plan to improve the pedestrian environment by constructing city-wide pedestrian corridors, enforcing pedestrian-related development control, and improving pedestrian facilities between and within the pedestrian units in Shenzhen. A series of actions are proposed for implementation to support the planning strategy, development control and design guidance for the pedestrian system. The above efforts aim at the goal of Shenzhen in pursuit of a comprehensive, integrative and feasible pedestrian system. Limitation of the plan is also addressed in this paper, accompanied by the suggestion on striving for more enforcement power for the plan. Building a walkable city by an implementable pedestrian system plan is one effort Shenzhen has undertaken, however which should not and will not be the only one.

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Notes:

¹ The Shenzhen Pedestrian Plan covers the whole Shenzhen Special Economic Zone, however not including the Longgang and Baoan districts in the outlying area.

² The exact names of roads/places are replaced by the alphabets A, B, C...