

# **Study on Tianjin Public Housing Residential District Planning to Meet the Needs of Migration in Rapid Urbanization**

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## **1 Background**

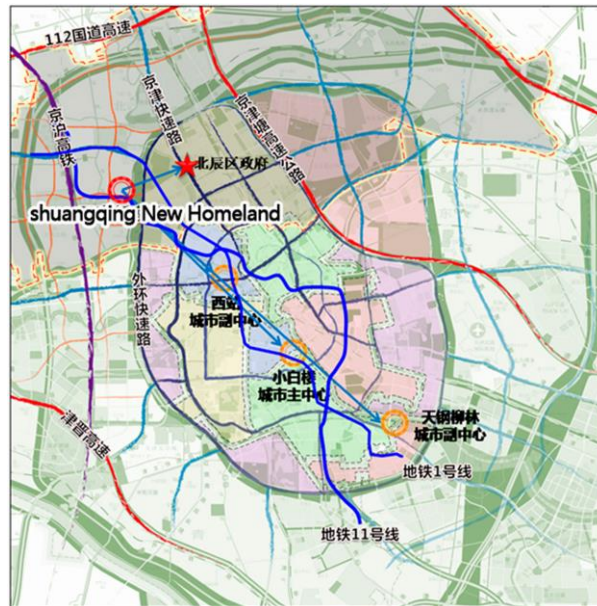
Along the rapid urbanization, the housing problem of medium and low-income residents in cities has been one of social problems, which is drawing the attention of government in the world for a long time. In present China, both the national policy and market of housing system are in the process of perfecting, which pay more attention to the low-income residents and rural residents. At the same time, planning and design ideas, criterion and statute of low-income residential districts are in the process of promoting.

In late 2008, the General Office of the State Council issued *the Several Opinions on Promoting the Stead Development of the Real Estate Market* and proposed to strive for solving the problem of transforming urban low-income poor family's houses and shantytowns basically for 3 years. And public housing construction has become an important method to solve housing problem, promote healthy real estate market and meet people demand. In June 2010, seven national ministries jointly issued *Guidance on Speeding up Development of Public Rental Housing*, and asked every area to formulate the development plan and annual plan of public rental housing, and organize to carry out by years. Before and after the policy issued, every area has carried out the corresponding plan and construction about public rental housing, the major layout is that the public rental housing groups with large amount and small scale are distributed at every area of a city, which brings inconvenience for the service level and final-period management of supporting facilities.

## **2 Tianjin public housing Residential District development situation**

With own reality, Tianjin formulated the public rental housing developing strategy "reasonably building in central city, large homeland at periphery of city"; particularly, a lot of new homelands are planned at the periphery of the central city since the beginning of 2006 and became an important measure of pushing the housing construction, driving the development of small towns at suburb, and satisfying the housing demand, wherein the constructed Huaming new homeland was selected into Shanghai World Expo in 2010 and shown to the world as the best practice area of city. Now in Tianjin, large-scale public mixed residential districts at edge of city core area with convenient traffic condition, which named new-homeland, are one kind of good choices for the low-income residents as well as medium residents.

Wherein the Shuangqing new homeland is located at the north part of Tianjin and covers 3 square kilometers; the current land mainly includes farmland and accompanies with a few channel and pond. The land is closely adjoined to outer ring express way, 15 km to the center of Tianjin, and 13 km to Tianjin Station; this area has good traffic environment and preliminarily formed a road traffic system formed by a highway, an express road, main and secondary roads; 2 subways in plan will pass through this area, therefore, this area enjoys superior geological position and regional advantages (figure 1).

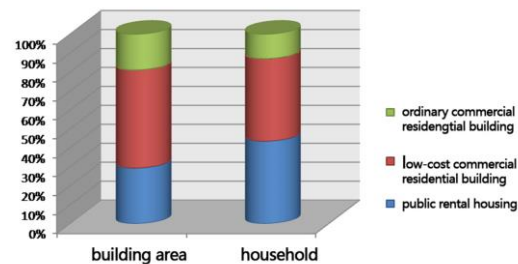


**Figure 1: Traffic condition of Shuangqing new homeland**

### 3 case study: planning method and feature of Shuangqing new-homeland

#### 3.1 Model of big mixing residence and small group

By following the security housing model of “big mixing residence and small group”, the residential product includes public rental housing, low-cost commercial residential building and ordinary commercial residential building (figure 2); therefore, the residents of public rental housing can organically fuse with the residents of commercial residential building, and equally enjoy the public service without psychological gap, thereby avoiding the formation of a new slum.



**Figure 2: Residential product of Shuangqing new homeland**

#### 3.2 Core idea stressing on regional coordination

The homeland security housing community is not alone, and capable of really reflecting the theme of humanistic concern by being integrated to the urban life and regional development. Shuangqing new homeland takes traffic as the entry point in planning, structures the road system for regional balance, contacts demonstrated town in south-north direction, communicates the central city in east-west area, and arranges the new homeland center at the core area of the principal bidirectional axis,

thereby a good grading service relationship with the main center of the area is formed, good service at the inner part of the new homeland is realized, and it becomes an important consisting part of Shuangqing area achieving the development and location of new north livable area of Tianjin central area. Moreover, the travel convenience of new homeland residents is guaranteed, residents can get a job at this area conveniently, and thus residents can live and work in peace and contentment really.

### ***3.3 Respect of ecological environment and local memory***

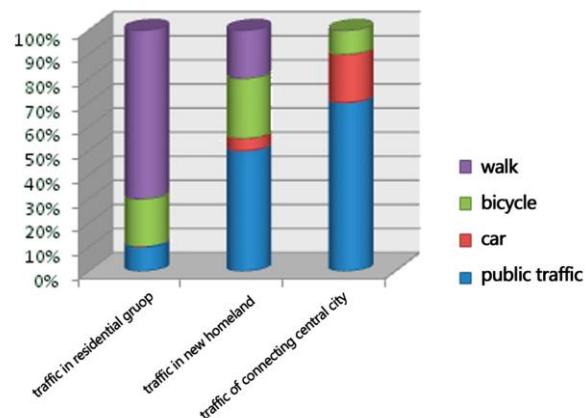
A brand-new security housing community must protect the ecological environment of the base, reserve the existing element of the base, create own cultural deposits, and promote overall quality of the area, thus its health and sustainable development can be realized. Shuangqing new homeland concentrates on renovating the current channel and surrounding land of the base, plans it to be an ecological valley, realizes the communication with surrounding water system, and forms a small cycle of the entire regional ecological system. The planned ecological valley covers about 25 hectares, and 2.2 km long, and 40-200 meters wide; it becomes an important ecological breeding land of the new homeland, links various functions in series, provide a place of leisure and entertainment for the whole community, and realizes the balance of environment and landscape (figure 3).



**Figure 3: Ecological valley design of Shuangqing new homeland**

### ***3.4 Model of guiding space by green transport***

One of the key points of security housing community planning is to realize the green and convenient travel goal. By fully using the traffic advantage of two rails, Shuangqing new homeland arranges a public traffic system connected with the rail stations, and realizes the traffic service system with relatively high accessibility between the new homeland and the central city, the public traffic stations within 500 meters is completely covered by the



**Figure 4: Green transport of Shuangqing new homeland**

main traffic network system in the area, and the traffic network system reaches in front of every residential building through a slow system. Finally, the green traffic mode of public traffic, bicycle and walk mainly in the new homeland security housing community is realized (figure 4). The plan is focused on deeply studying the security housing community at the rail station area, has carried out the comprehensive real estate development by combining the rail station. Starting and ending stations of public traffic are planned at the bottom layer to realize the no transit with the rail traffic; the bottom layer and roof platform of the building are properly developed to be the public facility of community service, thereby creating a good landscape service environment. The security housing community is intensively constructed in the form of point type high-rise, so that the utilization efficiency of land is improved and the regional value is promoted (figure 5).



**Figure 5: Comprehensive real estate development of Shuangqing new homeland**

### ***3.5 Exploration of public service supporting standard of public rental housing***

In actual life, there is a big difference among building area per capita of living communities in all levels. In view of this, the demand of living community in all levels shall be considered when the thousand-people index is checked by the planned population number of the residential community. Shuangqing new homeland is in the control index, and carries out the non-differential control with the commercial housing item on community building density, limit height of building, layer height, greening rate, and other indexes for guaranteeing the living quality of the public rental housing area; as considering about the particularity of public rental housing, population per household and plot ratio shall be adjusted, wherein the population per household is adjusted from 2.8 people/house to 2.4 people/house, and the plot ratio is adjusted from 2.5 to 3.0. According to the characteristics of the public rental housing user, individual public supporting facilities are adjusted so that it can accord with the using characteristics of the public rental housing better. It specifically includes: primary school, kindergarten, and other education facility shall lower the thousand-people index by 20% according to the requirement of the households structure; the community culture activity station and resident's activity field shall raise the thousand-people index by 10% according to the age structure and demand of

residents; The nursing home shall be shared with surrounding living area without compulsive requirement according to the age structure of the community residents; according to the income level and travel manner of residents, the parking space for bicycle shall raise by 20%, and the index for locomotive shall lower by 25%.

### ***3.6 Structure of security housing community model of “small family, big community”***

Viewing from the design of the house layout to the external environment, the plan of the public rental housing community has performed the directive consideration and design, and pointed out the design standard of the house layout. For the public rental housing is characterized by small living area, a part of living function, including receiving visitors, reception, party, is concentrated in the community, so that the group center of the public rental housing becomes a platform of interpersonal communication, and greatly shortens the distance of residents. Through the spirit molding of the field, residents generate the sense of identity and belonging on this community, simultaneously, safety of this street is enhanced, and the complexity and difficulty level of the high-density community management are reduced within limits. Specific to the supporting standard of the public service facility, the group of 300\*200 meters street outline scale is a model community; the new homeland project adds a public canteen, tea room, a washhouse, a chess and card room, a fitness room, a swimming pool, bathrooms, small size hotels, community medical stations, police service room, room for community management, and other facilities in the public facility supporting of every model community; through a part of overhead first layer of the building, the enclosure of corridor of the building, affiliated opening space of the public building, two-level public spaces of group courtyard, and other design methods, a comfortable and convenient public service is formed, a part of demand of internal household space is transferred to the public space of the community, thus the development model of “small family, big community” is realized (figure 6), the requirement on intensive and efficient development is reflected, and the human-based concern is spread.



**Figure 6: Overhead first layer and enclosure of corridor for public community**

### ***3.7 Assurance guiding system by proper technology***

Directing at the characteristics of the security housing community, the new homeland plan stresses on the development idea of structuring an ecological community by a proper technology. The plan designed a rainwater open trench with greening landscape effect, which can make rainwater flow into the water system in the community and is used for supply the water for landscape and wetland landscape. Rainwater in normal year can strive for zero discharge, thereby saving water for greening and irrigation. Reclaimed water through strict treatment can be reused by residents on the basis that every index reaches standard strictly; the treated recycled water will be used for the greening and irrigation of this community, thus the burden of inside water is reduced. The demonstration function of the security housing community in terms of water resource utilization is really realized. The plan adopts the intensive heat supply method to supply heat, preferentially uses clean energy source and intensive solar water heating system; moreover, the soil source hot pump, the underground water source hot pump, and sewage source hot pump techniques are tried. A low-cost energy-saving and environmental-protection ecological circulatory system of new homeland is structured. Through calculation, energy source can save about 13, 000 ton standard fuel yearly by promoting the solar energy utilization and ground source hot pump technology; finally, the ratio of renewable energy sources of Shuangqing new homeland area in the regional energy source consumption reaches 6.7%, which is higher than the 3% development goal of Tianjin.

### **4 conclusion**

Since starting at the beginning of 2012, Shuangqing new homeland has completed the construction of million square meters of public rental housing and low-cost commercial residential building at present; it is predicted that the first phase of the public rental housing and a part of low-cost commercial residential building will be checked in at the end of 2014, and the second phase project of the public rental housing will be checked in at the end of 2015. Along with the gradually construction of Shuangqing new homeland, the planning work and method has performed in-depth thinking on guaranteeing people's livelihood, maintaining social equity, and other core ideas. It is a good try in more concerned about the demand of migration of a lot of low-and-moderate-income population in rapid urbanization progress, and more focused on the housing demand of urban "sandwich" group; and carried out beneficial exploration on slowing down the population pressure in central city and pushing forward the construction of new demonstration area at suburbs.

### **Endnotes**

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**References**

- [1]Yu Lijuan, Ideal and reality on security housing, well-off level, June 2009: 46-48
- [2]Technical Standard of Tianjin Public Rental Housing Construction, Tianjin Planning Bureau, 2010
- [3]Tianjin Shuangqing New Homeland Plan, Tianjin urban planning & design institute, 2011
- [4]Zhao Peinan, New policy of Chongqing public rental housing: seek to solve the difficulty of public rental housing, China Investment, September 2010: 88-91
- [5]Tian Ye, Study on mixed habitation of all levels of Chinese city in transformation period: 2007

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