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REDEVELOPMENT OF RUSSIAN CLOSED TOWNS: THE EXAMPLE OF ZATO ZVEZDNIY

Abstract: The current economic crisis is having a strong impact on socio-economic processes in the development of Russian cities. The impact of the crisis is particularly strong on city territory where the activity of core industrial enterprises, military units or similar institutions has been stopped. In such cases, the situation is directly related to the functioning of military units or one industrial enterprise responsible for the formation of the city. In these cities, the socio-economic situation is unstable and is close to stressful. The average level of unemployment is growing, and the population rate is decreasing. The subject of this article is associated with the processes taking place in areas that are closed administrative-territorial formations (ZATO) of the Ministry of Defence of the Russian Federation in post-Soviet space. The closed town Zvezdnyy will be presented as an example.

Keywords: Closed administrative-territorial formations (ZATO), spatial strategy, urban planning, urban redevelopment.

Introduction

Currently a lot of Russian cities are undergoing significant developmental and structural changes that present different challenges. The transformation of those cities is objectively limited to the activity of single enterprises or single-industry activities. The situation in Russian cities needs changing. According to the Government Decree of July 29, 2014 No. 1398-p the accepted list of those territories includes 313 towns. This census doesn't take into account ZATO. Accurate data on the number of secret settlements was impossible to find, thus we can only rely on the Government Decree of the Russian Federation of 05.07.2001 No. 508, which approved the list of ZATO. In 2001, a list of 42 localities was approved. This number changed to 46 in 2009 as a result of their reorganization. Today the number of ZATO is 41 urban districts.

The current economic crisis is having a strong impact on the socio-economic processes in the development of Russian cities. The impact of the crisis is particularly strong on city territories where the activity of core industrial enterprises, military units or similar institutions has been stopped. The closed towns find themselves in an uncertain situation because military units were disbanded. Some in part have lost their closed status, while others are waiting for a decision of the Ministry of Defence of the Russian Federation regarding their future. The plans of the Defence Ministry to deploy entities that require special modes of operation and safety are unknown.

1. Origin of the phenomena of closed towns

It is possible to indicate 3 main groups classified by specialization and jurisdiction in ZATO: 1) Roscosmos, 2) Rosatom and 3) the Ministry of Defence RF (Fig. 1).

Scholars who are studying the history of the appearance of the closed cities indicate a number of reasons for the creation of closed cities [Hudjakova 2003; Komarov 2006; Durmanova 2011; Fajkov 2011; Slepukhina 2014; Maksimova 2015]:

- Ensuring public safety and the creation of the “nuclear shield” of the Soviet Union.

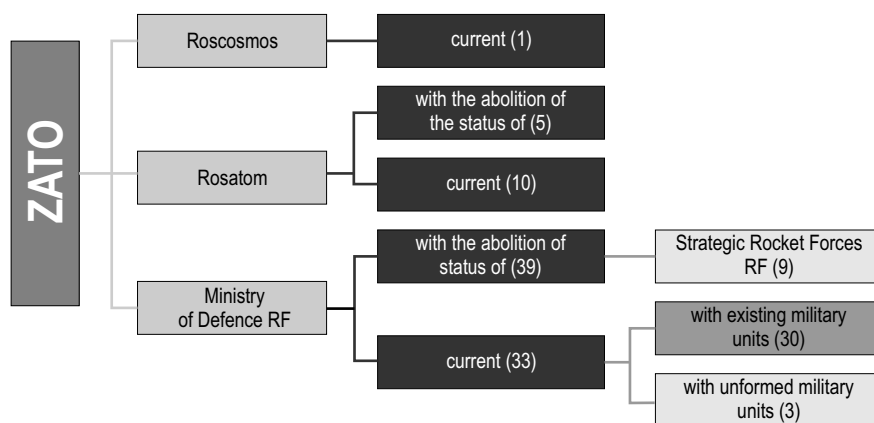


Figure 1. The classification of ZATO

Source: Own study based on [Government Decree of the Russian Federation of 05.07.2001 No. 508].

- Establishing areas for concentrated scientific and engineering personnel associated with the development of military technologies.
- Storing data on the production of weapons of mass destruction and the creation of new technologies in secret.
- Satisfying the necessity of compact residence for the population employed in the secret company therefore the employees were settled close to their work place.

Creation of these closed communities was in the interest of the Soviet state, therefore, the order of their formation and activities were regulated by normative legal acts of the USSR and RSFSR and classified as „top secret”. These closed communities were mostly artificially created or formed on the location of the military camps beginning from 1940s [Lappo, Polian 1998].

In 1955 Building Regulations were introduced by the decision of the USSR State Committee for Construction; accordingly construction was carried out all over the USSR. No individual building regulations for closed cities in the Soviet Ministry of Defence involved urban planning. There were special features in closed cities, which was to designate not only a number of buildings, but also streets, blocks and whole towns [Tokunaga 2005]. Characteristic for all closed cities of the Strategic Rocket Forces was location in the forests. Perhaps the project planning documents are secret for these towns. The study of the master plans and satellite images show that closed towns of Strategic Rocket Forces were built in accordance with the typical development occurring in the 60s-80s.

2. The present situation in closed towns in need of urban regeneration

Low-rise buildings oriented along the streets and a small percent of individual buildings characterize the organization of urban space in closed towns. Built-up areas account for less than 35% of the total town area. The buildings of cultural and community destination are located in the center of the town and are located along a single main street. Most cities of this kind have wide streets and well-developed social infrastructure. Agricultural or large industrial enterprises are missing in ZATO. Usually after the withdrawal of military units, the municipal institutions become the forming enterprises here [own study: cases ZATO Gornyy, ZATO Molodezhniy, ZATO Lokomotivniy, ZATO Zvezdniy, *etc.*].

To ensure stable operation of enterprises and facilities located on the territory of ZATO, the state provides special conditions for citizens' residence.



Citizens living or working under a special regime are entitled to overall social compensation, which provides an increased level of budgetary security for the population, social protection measures, incentives in remuneration, insurance and state employment security. The “socialization”, the social infrastructure of the closed cities is a way that the Soviet government found to offset for the residents the inconvenience and discomfort that the secret regime brings.

Procedure for the organization of activities by local authorities has a number of features on the territory of ZATO and is connected to the permanent co-ordination of issues by the Ministry of Defence RF. There are several problems in management. One of the key problems is the low level of efficiency in the realization of local government in ZATO. In some cases almost no real financial or economic basis for the organization of local government exists due to the small number of residents living and working in the closed towns. In this situation, the tax revenues are limited to the local budget of the municipality.

Therefore, the resolution of financial problems is possible only at the federal level, which is regulated by the Government Decree Russian Federation of July 14, 21992 No. 3297-1.

The main characteristics of the socio-economic condition of the closed town are the following [Fajkov 2011]:

- The closed town depends on the city-forming object and its founder – the Ministry of Defence of RF. This is the main place of work for 70% of the working population of „military” towns. The company often owns the various citywide resources and its management is an informal power in the city.
- The dynamics of population growth in ZATO depend on the sphere of the city-forming object. The „military” towns tend to decrease the number of residents [*Federal State Statistics Service 2002-2016*].
- There is traditionally a low unemployment rate in ZATO. This is official information [*Federal State Statistics Service 2002-2016*]. The problem for qualified professionals is a narrow labor market and low average salary. In recent years a growing trend has been for the residents of closed towns to work in nearby big cities. It is also noted that most of all school graduates want to leave ZATO.
- Budgets in ZATO are formed at the expense of inter-budgetary transfers from 70% to 90%, which indicates the high level of dependency of closed towns on the federal government, and therefore on the political processes in Russia [Slepukhina 2014].



In fact, signs of a closed town include restrictions on the rights of residents living in Zvezdny concerning:

- maintenance of economic and business activities;
- how land and natural resources are used and managed;
- carrying out of real estate transactions.

In ZATO the main directions in spending have been education, housing and utilities, healthcare and physical education.

In the future, closed towns will have several options for development: a) to remain at the existing phase; b) to develop and use the existing potential of ZATO; c) to make some transformation but in an ordinary way; d) to become a part of a larger municipality [Tallon 2010; Uskova *et al.* 2012].

3. The case of ZATO Zvezdny – origin and present situation

Zvezdny is a closed city of the Russian Federation Ministry of Defence situated in the Perm region. Founded in 1961, the closed town Zvezdny was formed after placing a rocket division there. The first name of the town was Perm-76. The municipality is located 38 km from the city of Perm and 330 km from the city of Yekaterinburg (Fig. 2).

Most of the inhabitants in 2014 were former military and their families. But the city's population is gradually decreasing (Table 1).

The ZATO Zvezdny includes only one settlement. The town is located in the central part of the Perm municipal district. Today the total area of land

Table 1

The increase or decrease of population during the period of research*

<i>Resident population (in thousands of people)</i>							
2002	2006	2007	2009	2010	2012	2013	2014
9628	9400	9400	9300	9151	9201	9143	8873

* Used data from open Internet sources: [https://ru.wikipedia.org/wiki/%D0%97%D0%B2%D1%91%D0%B7%D0%B4%D0%BD%D1%8B%D0%B9\(%D0%9F%D0%B5%D1%80%D0%BC%D1%81%D0%BA%D0%B8%D0%B9%D0%BA%D1%80%D0%B0%D0%B9\)](https://ru.wikipedia.org/wiki/%D0%97%D0%B2%D1%91%D0%B7%D0%B4%D0%BD%D1%8B%D0%B9(%D0%9F%D0%B5%D1%80%D0%BC%D1%81%D0%BA%D0%B8%D0%B9%D0%BA%D1%80%D0%B0%D0%B9)); last access: 14 Nov 2016. Zvezdny (Pemskii krai).

Source: Calculated by the author based on the Russian Federation, federal portal of statistical data. – URL, [www.gsk.ru].



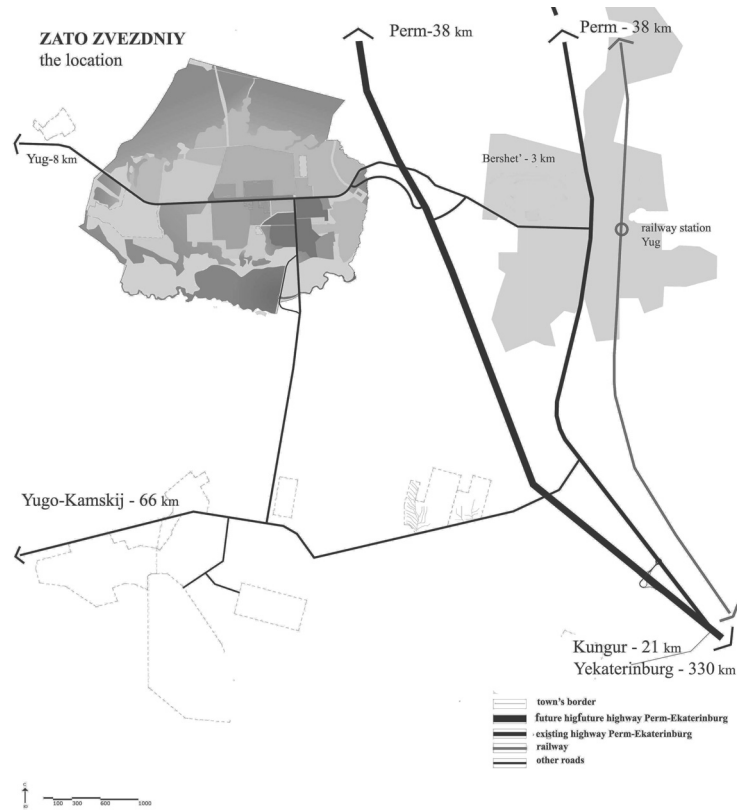


Figure 2. The location of closed town Zvezdny

Source: Own work.

is 90.8 square km of which land settlements consist of 563 ha. Zvezdny is bordered by the rural settlements of the Perm municipal district.

According to the 2013 report of the head of local administration, we can see the following situation in the labor market of the researched territory: 1591 residents are employed in budgetary sector and municipal enterprises, 615 persons work in other organizations located in the area, and 250 persons work in private sector. The types of small business activity cover 52 fields. The most common type of activity is procurement and trade of food and consumer goods. In the trade sphere were registered 84 enterprises. Also there are 11 manufacturing companies here. Agricultural enterprises on the territory of town are absent (Fig. 3).



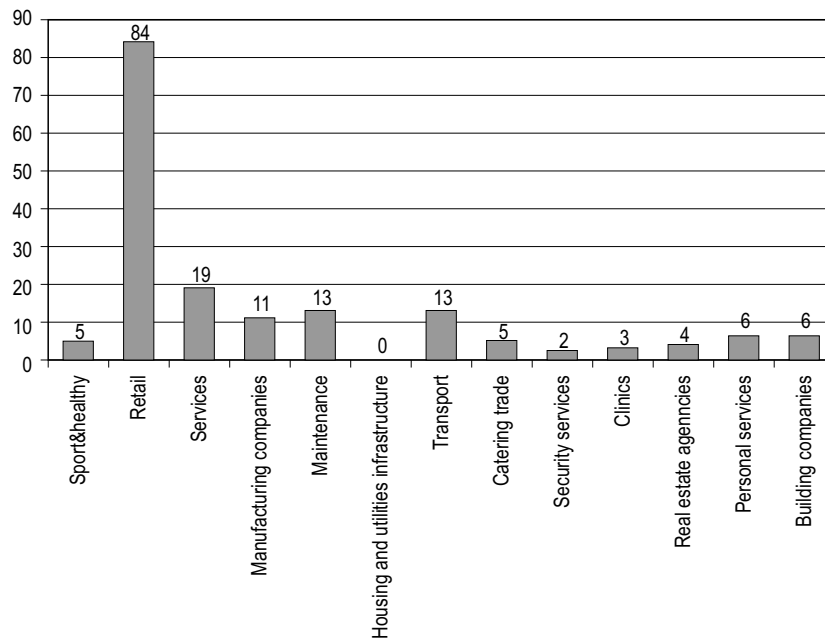


Figure 3. The main types of small business activities at Zvezdnyy

Source: Own study based on [Reports of administration ZATO Zvezdnyy 2010-2015].

About 4450 persons are working outside the town and comprise 69% of the total employees. Usually the unemployment rate fluctuates at a level of 1.5% in relation to the number of economically active population during the year.

The low unemployment rate can be explained by the fact that a lot of the military seniors living there have received a pension after the age of 45 [Reports of Administration ZATO Zvezdnyy 2010-2015].

The size of pensions for military personnel is equal to a middle-level salary in the Perm region; therefore these persons can open their own enterprises or be creative persons.

In 2011 all the basic documentation for spatial planning and development was approved. The general directive of these documents is the development of the town by two scenarios: undergo no change or become an ordinary city. According to these documents, the activities of the local authority to attract investors to the town reflect the general trend in investment policy of closed towns in Russia – to involve the federal institutions into the investment projects, and to rely on the industrial development [Durmanova 2011].



In 2012 the Ministry of Defence RF raised the question about recalling the status of closed town from ZATO Zvezdnyy and started to prepare acts with the terms and definitions of the transitional measures for removal of the status. The supposed date for cancellation of the closed status is the year 2018. This initiative has been associated with the military withdrawal from Zvezdnyy in August 2012.

Currently, the town administration finds it difficult to determine in which direction to develop the area. The politic of the Ministry of Defence RF is unclear. The same picture is in accordance with the scheme of spatial planning of the Perm region. Zvezdnyy is situated within two zones of development: as the ecological compensation zone and as the outer border of Perm agglomeration [*Government Decree ... 2009*].

Nowadays, in an effort to attract investment and create jobs, the city administration has performed the unregulated granting of land plots in free areas to accommodate residential houses and industrial facilities. Documentation of territory planning for huge land plots has not been prepared, and no regulations have been established for development. This leads to the formation of chaotic housing development, to the loss of the urban environment; to the detriment of important urban transport and pedestrian networks; and to the blockage of access to common areas and recreational facilities.

The fact is that the problem of slow rates of development of new territories and the distant perspectives of economic benefits will divert required resources to the maintenance and regeneration of existing infrastructure. The bet to get investors to buy the sites for industrial development did not produce the expected results. For example, in ZATO Zvezdnyy of the 16 investment sites only 4 were sold, and of 196 buildings only 41 were realized to date. Therefore 93 percent of them were conserved. The low quality of urban engineering and road infrastructure, and the strewn space of investment sites also negate the beneficial effects that come from the low cost of real estate and its location in the close neighborhood of Perm. Also a substantial increase in the labor market is not happening. The average numbers of employees ranges from 2 to 5 people at one object [*Report of Administration ZATO Zvezdnyy 2010-2015*].

4. Scenarios of spatial development of the town Zvezdnyy

In the study, we examined various options for the development of Zvezdnyy, offered by existing spatial planning documents and the investors' offers. We also conducted our own assessment of the territory by means of SWOT analysis in the context of the various concepts of territorial development.



The main goal of the research was to identify core problems related to spatial development. Because of the historical character of closed towns, where the formation was not the result of evolution, logical continuity and change in urban space and imagery are absent. Those cities were founded artificially in accordance with the Soviet administrative system and centralized administrative planning. [Meerovich 2015].

Using SWOT analysis original features of the closed city Zvezdnyy were identified as: nature, available housing and close proximity to a big city – Perm.

These unique characteristics were taken as the basis of development, which “... should be considered as the improvement of the urban environment and the internal formation and promotion of a new image of the city” [Program... 2012].

In accordance with the above concepts, various scenarios of territory regeneration of ZATO Zvezdnyy were made and have been presented in Table 2.

Scenarios 2 to 5 as described above inherently share a common direction, which is a non-industrial orientation for development of the town territory. The general development of the site relates to the educational, entertainment and sporting spheres. The advantage of these projects is their environmental friendliness and attractiveness for new residents who move to the suburbs. Based on the realities of the processes of de-industrialization of the modern Russian society, they also offer improvements to the quality of health services, education, and tourism, etc. [Vizgalov 2011].

The general defect of these scenarios can be the lack of stable tax revenues for the town budget, which is more difficult to forecast. Almost all of these projects require large financial investments and administrative efforts. These costs are not comparable with the return of investment in usual administrative thinking.

Nowadays we can claim that on the town territory we have the realization of a moderately optimistic scenario by the general plan of ZATO Zvezdnyy. The problem lies in the reduction of population, because no available jobs at the moment can compete with the offers of regional centers. All businesses that were created cannot attract more than 2 to 10 employees with average qualifications. After 2018, the city might lose stable income in the form of federal subventions.

In connection with this we offer the following plan of spatial development of the city as an ordinary town.

Offering a variety of development scenarios, we are not able to forecast what the local community will select and how the administration will adhere to a common approach in its implementation. The result is not entirely predictable.



Table 2
The various scenarios of territory regeneration of ZATO Zvezdnyy

No.	Name of concept	Key ideas	Opportunities	Weakness
1	Development of the territory according to socio-economic development and the general plan of the town	<ul style="list-style-type: none"> - "Suvorov school" - construction of new social infrastructure - selling investment sites for industrial development - two scenarios – moderately optimistic and optimistic directions - construction of private housing and apartment buildings 	<ul style="list-style-type: none"> - new workplaces - development of industries and small enterprises - housing program for young families 	<ul style="list-style-type: none"> - isolation of the school territory from the urban structure - the break in urban structure - the huge burden on the city budget from the establishment of a new social and transport network without the status of closed city - the employed population will be reoriented to work outside the territory – in Perm - the unresolved land issue, the unresolved issue of providing home ownership
2	Eco-town	<ul style="list-style-type: none"> - development by natural and ecological guidelines - transformation of the urban pond into a main recreational area with a focus on the urban activity and disclosure of natural tourism potential and deployment of ECO enterprise - renovation of the centre and urban pond territory - reconstruction of the landfill into a modern waste treatment plant with separate waste collection and transformation of energy into pure energy - focus mainly on seniors and children 	<ul style="list-style-type: none"> - new workplaces - growth of ecological industries and small enterprises - improvement of the ecological situation - rise in comfort of the urban environment - demand for the value and quality of locally produced craft and food, the spread of the concept of healthy lifestyle [Voronov, Dolnikov 2010] 	<ul style="list-style-type: none"> - lack of interest in the ecological concept by the main stakeholders (administration, landfill owners, residents) - difficulty maintaining a balanced budget

No.	Name of concept	Key ideas	Opportunities	Weakness
3	Historical military town	<ul style="list-style-type: none"> - "Suvorov school" and the military-patriotic museum complex, hospice or home for the elderly as an alternative service in the Armed Forces of the Russian Federation - allocation of large areas for mass historical reconstructions and festivals, games with sport and military trends - conservation and reconstruction of a helicopter landing area or a helipad, the construction of a new race track - development of housing conditions for new residents, and logistic and tourist centers 	<ul style="list-style-type: none"> - competence in rebranding the territory - advancement of new trends for small enterprises - rise in touristic and labor potential - rise in comfort of the urban environment 	<ul style="list-style-type: none"> - lack interest the main stakeholders (administration, business, residents) in the "military history town" concept - a difficulty maintaining a balanced budget
4	Closed town	<ul style="list-style-type: none"> - expanding the territory of Suvorov school, creating a military university and a residential area for the military with a view of the pond - returning to the original Soviet version of the fully closed town with military regime - concentration on the reduced civilian population and industries, and focus on the military needs and education complex for military needs. 	<ul style="list-style-type: none"> - new workplaces - satisfaction of former military and elderly residents of ZATO «Zvezdnyy» - improvement of the psychological situation in the city, returning the sense of uniqueness and security for local residents 	<ul style="list-style-type: none"> - decline urban life - dependence from Federal finance - lack own money to the maintenance and reconstruction military infrastructure that was ruined since 2000 - isolated and arbitrariness

No.	Name of concept	Key ideas	Opportunities	Weakness
5	Active recreation town	<ul style="list-style-type: none"> - construction of the „Olympic Park” - creation of a modern diagnostic medical center - development of attractions for tourists and sportsmen - development of sports for activity in summer time (water sports facilities, swimming pool, rentals, hiking trails in the woods) and wintertime (ice fishing, skiing, ice hockey) for locals and visitors. - construction of year-round camp grounds and accommodation for the hippodrome, involving development of individual cottage housing in the west of the town. 	<ul style="list-style-type: none"> - new workplaces - rise in number of residents - development of touristic lines - improvement of the ecological situation - rise in comfort of the urban environment 	<ul style="list-style-type: none"> - a difficulty maintaining a balanced budget - lack investors - a difficulty maintaining the sports objects
6	„Industrial cluster scenario”	<ul style="list-style-type: none"> - creation of a production cluster - placement of logistics centers of class «A» and «B»; Perm flour mill; petroleum products; building materials 	<ul style="list-style-type: none"> - new workplaces - increase in the number of residents - increase in city budget revenues 	<ul style="list-style-type: none"> - expensive infrastructure for the city budget - ZATO can lose important advantages such as low-cost housing and land lease revenues

No.	Name of concept	Key ideas	Opportunities	Weakness
7	„Zvezdnyy” the ordinary town”	<ul style="list-style-type: none"> – focus of all efforts on the built-up area and conducting renewal – taking the industrial cluster out of the housing development by organizing posts in the village Yanychi – redesigning the newly planned-functional quarter on the site of entrance to the city – creation of a unified and more attractive area for local residents – a promenade and a comfortable beach around the pond – location of clean production – use of the Suvorov school territory as open space for urban activity 	<ul style="list-style-type: none"> – independence – flexibility in response to different conditions – rise in comfort of the urban environment – balanced budget – development without causing any detriment to residents or placing a significant load of the expenditure side on the budget – consideration and substantial retention of all the unique features of the present city 	<ul style="list-style-type: none"> – perspective to become the bedroom suburb of Perm – loss of unique features and therefore less possibility to increase the population – lack of interest by the main stakeholders (administration, business, residents)

Source: Own work.

In any case, we insist on an approach called “reasonable reduction”. The administration of the Zvezdnyi should adopt a strategy for elimination of all surpluses (Fig. 4).

It means the following:

- focusing finance and other available resources on improving the quality of existing infrastructure and systems of the city;
- getting rid of all the excess and not creating anything extra that diverts resources and time (territory projects, the volume of housing construction, new roads, *etc.*);
- when setting residential development parameters, allowing for the adjustment of a variety of housing types oriented to different sizes and household income;
- evaluating these projects, all carried out by the various sources of funding and public and private projects implemented in the city, according to improvements in the urban environment, its comfort, attractiveness, aesthetics, and safety;
- assuring each project brings the maximum effect in improving quality;
- involving the local community in the discussion and participation in projects carried out in the city;
- understanding people need to feel their involvement in the transformation of the city;
- realizing one of the most effective projects are projects to transform the common areas: parks, streets, squares, and sports fields.

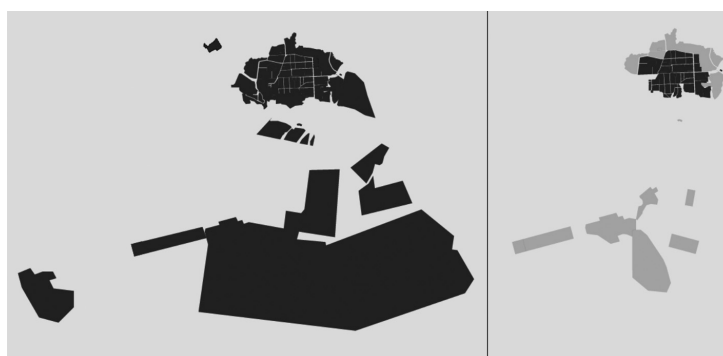


Figure 4. The main assumptions of urban redevelopment of ZATO Zvezdnyi

Source: Own work.

5. Recommendations

The following recommendations are suggested to provide the administration of Zvezdnyy with a desirable strategy to fix the Master Plan of the city, the Rules of Land Use and Development and the Strategy of Socio-economic Development of the Territory.

Thus to realize the potential for development that occurs when you open the territory of ZATO, the conditions under which citizens will become interested and feel it is desirable to stay in the city must be deliberately created. Later, the pleasant, human urban environment will also be more interesting and profitable for investors.

It is likely that the city will keep its closed status and military units will occupy their former positions. We believe that the city should be prepared for this version of events, and thus “closed” so as to remain “open”. To do this, you need to plan stand-alone external transport link that will allow the division of transport services to civil and military parts of ZATO. In turn, autonomous transport links will provide not only placement of military units, but also safe routes to serve the industrial areas, especially for the such industries that is classed as dangerous or unhealthy.

Furthermore, it is necessary to make changes to the project documentation for the placement of the federal highway regarding its connection to the existing transport corridors in the southern part of ZATO. Restoration of inland transport links between the industrial-military part of ZATO and residential plots will provide communication for both officers and civilians.

The city authority should concentrate most investments and efforts on improving the quality of public open spaces and the existing social infrastructure. The preservation of existing values for people living on the territory of ZATO should be the priority for the local government. Only the visible advantages of living in Zvezdnyy will be able to keep existing residents and attract new people from neighboring towns.-

So the city should make a strategic plan to change processes in the context of land management and use, namely:

- Shrink the space provided for residential and industrial building.
- Evaluate municipal property to assess the most efficient use of real estate (buildings and land).
- Plan the placement of production facilities without creating strictly functional divisions, but rather provide mixed residential development according to technical regulations.



- Prepare documentation for territory planning in relation to the areas that are now under construction, define public interest in the formation of an open, coherent planning structure of the city and develop accessibility in transport and pedestrian networks.
- Avoid selling or renting plots without the development of urban land permits; urban land plans should be developed as part of the territory planning documentation.
- Develop urban regulations with limiting parameters for permitted construction to protect the unique environmental scale, to ensure high-quality architecture in a variety of typologies of buildings, including orientation relative to different sizes and household income.

Additionally, maintain and strengthen unique features, relying on nature conservation, and the development of affordable housing and attraction of tourists from Perm and other regions to attend unique events.

Conclusions

The case of ZATO Zvezdny is shown as a territory in need of comprehensive urban redevelopment. Market-oriented companies are not ready to place investments and activities in cities with signs of decline. Practice shows that the unused areas, the buildings and infrastructure of decreasing cities are in need of new tools, but also a new planning paradigm. Namely, the transition from development oriented to “growth” to development oriented to “reasonable reduction”. This serves as a basis for a general conclusion with regard to all Russian closed towns.

Analysis of the development of urban settlement has established confirmation of cycling in urban development; life cycles of individual cities are objectively limited by the activity of single enterprises or single-industry activities. The classical linear approach to solving spatial development problems cannot be transferred as a standard to closed cities. The foregoing does not work for the redevelopment of city space.

After liquidation of functional specialization, such cities usually have insufficient resources of their own in reserve for the adaptation required to change core functions. This results in the city losing its greatness or status as a city, or completely ceasing to exist.

Approaches to solving the spatial development of cities and developing a strategic selection of problems to be addressed cannot be just copied because each city has its own unique features. It is especially important for cities



with impaired evolutionary development, as in the case of the closed city. It's important to define unique values for urban development and the methods of its conservation to change documents of spatial planning and for implementation later on. But the practice of urban extension which is promoted now by the government and the local administrations should be replaced according by principle "reasonable reduction".

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