UDC 69.003

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Urban design concepts creation for urban areas redevelopment projects

Modern cities face high demands on the quality of the urban environment and building construction sector. The paper is devoted to the development of urban planning concepts at the initial stage of the life cycle of any construction object as the primary document substantiating the possibility of its implementing in real life. The research question is how to organize the process of optimal and effective design solutions searching, taking into account the interests of all participants in the territory development project: developers, city authorities and the population in whose interests the territory is being developed. The analysis of the existing process of developing an urban planning concept has been carried out, the goals and objectives of the document development have been identified and systematized. The article highlights three main goals of any urban planning concept developing: as a tool for financial assessment of effectiveness, legal assessment of project feasibility, as well as a tool for coordinating design solutions with urban development plans and the requirements imposed by the city to modern buildings. The article presents a functional model for the development of an urban planning concept, which is aimed at effective coordination of the work of all participants in this process.

Keywords: *urban planning concept, redevelopment, building, financial model of territory development, functional modelling*



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Urban redevelopment is an urgent area of urban policy in many cities around the world that are facing the consequences of urbanization. The main problem is the search for optimal design solutions aimed at achieving the goal of sustainable urban development [1, 2]. In world practice, considerable attention is paid to the issue of substantiating design solutions at the stage of developing urban planning concepts. This type of document performs several important functions:

- function of officially coordinating visions for the development of the city's territory by developers and city authorities;
- function of implementing solutions for sustainable urban development, which consists in implementing the principles of environmental safety, social comfort and economic efficiency of the design solution;
- function of forming the architectural and urban appearance of the city.

Currently, special attention is being paid to the quality of the urban environment. The national program "Housing and a comfortable urban environment", which operates in the Russian Federation, defines the formation of a comfortable and safe urban environment as a key goal.

Achieving the goal of improving the quality of building in modern cities of the Russian Federation lies in the field of integrated territorial development and taking into account the range of factors of land use, social security of the population, engineering, transport services, and environmental safety requirements. It is important to find optimal solutions that take into account the interests of all participants in the construction process — developers, city authorities and various groups of the population [3, 4].

The solution of this complex task is carried out at the stage of planning the life cycle of any construction facility as part of the development of an urban concept for the development of territories. This document is developed at the pre-design stage of building any territory and provides a justification for choosing a further design solution [5–7].

The objectives of its development include addressing the following issues:

1. Coordination of the functional content of the developer's project proposals with the city authorities in order to coordinate planned urban development activities.

2. Approval of marginal parameters for the development of territories and, if necessary, justification for making changes to existing indicators.

3. Definition of the list of measures necessary for the implementation of the project solution with the division of financial obligations between the participants in the process.

The tasks of developing an urban planning concept include confirming the fact of full compliance of the territorial development project with the current legislation, as well as compliance with regulatory requirements for the provision of social, transport and engineering infrastructure [8, 9].

International experience emphasizes the need for a systematic analysis of the life cycle processes of a construction facility using modern methods of functional and organizational modelling [10–12].

There are many risks at each stage of the life cycle. The task of identifying and minimizing them is especially relevant for the stage of development of the urban development concept of territories, at the stage of development of which the planned effectiveness of the project is laid [13–15].

Thus, the urban planning concept is the primary document confirming the fact that design solutions, on the one hand, ensure the national goal of creating a comfortable and safe urban environment, and on the other hand, determine the effectiveness of its implementation for the developer.



Fig. 1. Key tasks of urban planning concept for a territory redevelopment

The purpose of the study was to study the specifics of the development of an urban planning concept, taking into account the specifics of Russian reality, the allocation of which will improve the processes of building modern and sustainable cities.

The study allowed us to identify three main tasks of the urban planning concept in the life cycle of a construction facility, shown in Fig. 1.

1. Urban planning concept as a financial planning document for the effectiveness of a redevelopment project

The urban planning concept is being developed as part of the process of evaluating the financial effectiveness of the redevelopment project (Table 1). The ultimate goal of developing this document is precisely the financial assessment of the feasibility of the project, which consists of the total cost of its development and the planned income from its implementation. The cost of building a territory consists of the sum of the costs of activities at the stages of planning, design and construction.

2. Urban planning concept as a document of legal regulation of the conditions of development of the territory

At the stage of developing an urban planning concept, a primary legal assessment of a development site is carried out, which is aimed at identifying the main legal risks associated with its development. As practice shows, legal problems can arise at any stage of the life cycle of a construction facility. At the same time, the consequences of their occurrence can be severe, up to the point of stopping construction, which leads to financial losses from the unrealizability of the project.

Their timely identification and assessment is an important and complex task.

These include the following main risk groups:

- property relations regarding the land plot, legality of ownership rights, availability of easements;

Table 1. Initial data of the urban planning concept for a financial model preparation

Life cycle stage	The assessment aspect in the urban planning concept
Planning	• parameters of the planned development of the territory, taking into account existing restrictions; • requirements for functional content, taking into account the existing conditions of provision of social, transport and engineering infrastructure in the design area; • encumbrances on the construction of additional infrastructure
Projecting	• assessment of the complexity of the design solution; • requirements for the design solutions of the building area; • special design conditions
Building construction	• technical conditions for the organization of construction production; • technological complexity of construction

- existence of urban planning restrictions, the presence of zones with special conditions for the use of territories, the requirements of the rules of land use and development;
- environmental constraints in the area of the need to ensure environmental safety and nature protection.

3. Urban planning concept as a document for the implementation of the goals of planned urban development

In this aspect, the urban planning concept acts as a document confirming that redevelopment design solutions contribute to achieving the goals of the current urban policy. Each city develops development plans, which are fixed in the urban planning documentation — master plans of cities in the medium-term planning horizon and the Master Plan for the long term. The redevelopment projects being developed should support the overall direction of the city's development and contribute to achieving targets for the quality of the urban environment and the standard of living of the population.

The evaluation of design solutions consists of several directions:

1. Improvement of the quality parameters of the urban environment from the implementation of the redevelopment project. The effect is estimated by improving the indicators of population availability of various types of services, increasing the volume of construction of residential, public, transport, engineering and other types of infrastructure.

2. Ensuring the socio-economic impact of the redevelopment project. The effect is estimated by the number of jobs, the planned results of the project.

3. Inadmissibility of creating negative consequences of environmental degradation from construction. The most common examples are the construction of residential buildings that are not provided with social facilities, increasing the passenger load on the transport network and creating prerequisites for traffic congestion or overloading existing engineering networks.

Fig. 2 shows the main areas of attention to the implementation of urban quality indicators of the urban environment in the urban planning concept of the redevelopment project. These include the areas of social services for the population, the development of transport and engineering schemes, and preliminary decisions on the architectural and urban appearance of buildings.

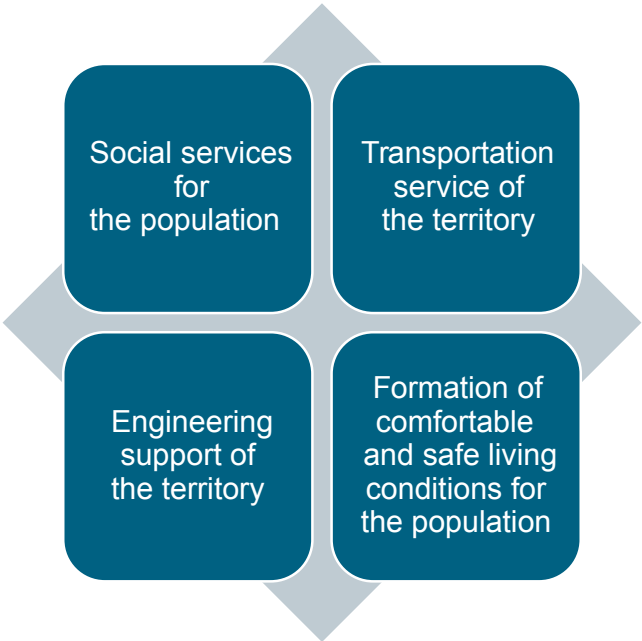


Fig. 2. Main areas of urban quality indicators consideration under the development of urban planning concepts

The designated objectives of the urban planning concept development determine the standard composition of the documentation shown in Table 2. It includes three main blocks of information:

- block 1. Information about the existing use of the territory, conditions of transport and engineering support;
- block 2. Information about the state of the territory in the zone of influence of the redevelopment project;
- block 3. Information about the legal status of the territory and the existing restrictions on its development;
- block 4. Project proposals for the redevelopment of the building site and planned technical and economic parameters of development.

An important feature of the development of the urban planning concept of the redevelopment project is the organization of the process of its development, coordination and approval.

The complexity of the urban planning concept as a document is determined by a large number of participants in this process, whose main functions are described in Table 3.

The functional modelling of the process is shown in Fig. 3. The process of developing an urban planning concept includes three main stages:

1. Study of the building site.
2. Development of options for the development of a building site. Building financial development models.
3. Selection of the development option, approval of the financial model and its further coordination.

In conclusion, it should be noted that the urban planning concept is the first document that is being developed for a building site and defines its development. It plays an important role as a tool for coordinating plans for the development of the territory by all participants in the process: developers, city authorities and the population. The key to the effectiveness of the project is an integrated approach to analyzing existing data and building predictive

Table 2. The standard structure of the urban planning concept documentation

Block 1	Information about the existing land use of the territory, conditions of its transport and engineering service	• building site plan; • existing land use of the building site; • the layout of the existing residential and non-residential facilities on the building site
Block 2	Information about the state of the territory in the zone of influence of the redevelopment project	• layout of existing and planned social services and maintenance facilities within the limits of regulatory territorial accessibility beyond the boundaries of the building site; • calculations of the existing need for social and maintenance facilities for the building site
Block 3	Information about the legal status of the territory and the existing restrictions on its development	• constitutive legal documents for Title documents for the building area land use; • the boundaries layout of zones with special land use conditions on the building site; • other documents of urban planning restrictions for the building site
Block 4	Project proposals for the redevelopment of the building site and planned technical and economic parameters of development	• the planned boundaries layout of the sustainable development of the building site and allocation of its functional elements within the planning structure the building site; • the layout of the proposed social and maintenance facilities; • information about labor places allocation within the boundaries of project development; • proposals for transportation services on the building site; • proposals for the engineering support on the building site; • activities aimed at creating comfortable and safe living conditions for the population

Table 3. Participants in the urban planning concept development process

Participant in the process of developing an urban planning concept	Operational tasks
The General Director of the project	• setting the goals for building site development; • acceptance conclusion on the building site development strategy; • selection and approval of the recommended land use building site design project
Technical customer	• preparation of information on the technical possibilities of the building site development; • development of land use planning design solutions, calculation of technical and economic indicators and the standard output of square meters of valuable area; • calculation of construction costs
Real Estate Agency	• development of recommendations on the functional content of the building site based on marketing research; • land use planning solutions scenarios development
Legal Department	• legal assessment of the building site
Finance Department	• initial assessment of the efficiency prospects for the development of the building site; • financial assessment of development options for the building site
Technical and Economic Council	• decision-making process on further work with the development site based on the initial analysis of marketing research, technical and legal assessment; • acceptance conclusion on the building site development strategy; • selection and approval of the recommended land use building site design project

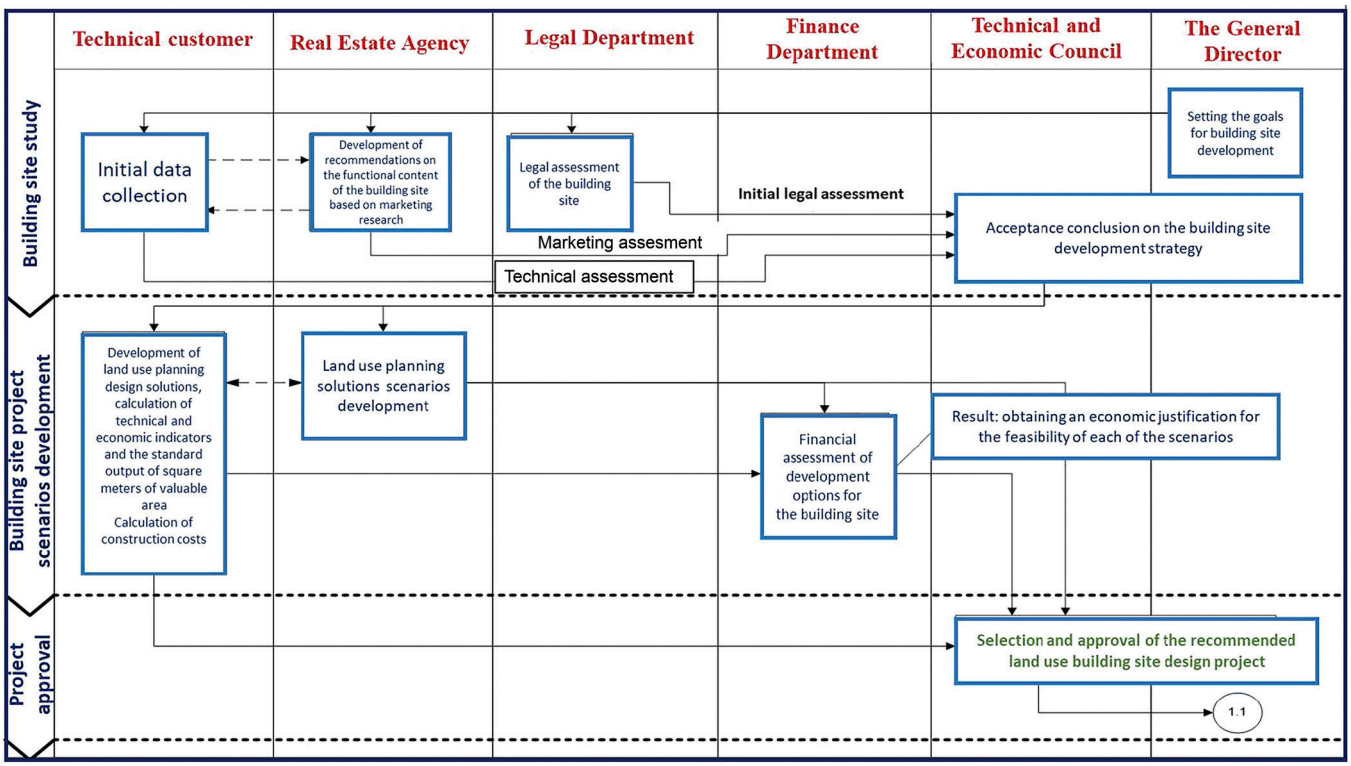


Fig. 3. Functional modelling of the urban planning concept development process

financial models of the life cycle of a construction facility. Thus, the urban planning concept plays an important role in ensuring the goal of sustainable urban development and achieving the targets of sectoral National projects of the Russian Federation.

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Особенности разработки градостроительной концепции при редевелопменте городских территорий

Современные города предъявляют высокие требования к качеству городской среды и застройке. Статья посвящена вопросу разработки градостроительных концепций на начальном этапе осуществления жизненного цикла любого строительного объекта как первичного документа обоснования возможности реализации проекта городской застройки. Исследовательский вопрос заключается в организации процесса поиска оптимальных эффективных проектных решений с учетом интересов всех участников проекта застройки территории: девелоперов, властей города и населения, в интересах которого и происходит застройка территории. Проведен анализ существующего процесса разработки градостроительной концепции, выявлены и систематизированы цели и задачи разработки документа. В статье выделены три основные задачи разработки градостроительной концепции как инструмента финансовой оценки эффективности, правовой оценки реализуемости проекта, а также инструмента согласования проектных решений с городскими планами развития и требованиями, предъявляемыми городом к современной застройке. В статье представлена функциональная модель разработки градостроительного концепции, которая нацелена на эффективную координацию работы всех участников данного процесса.

Ключевые слова: *градостроительная концепция, редевелопмент, застройка, финансовая модель освоения территории, функциональное моделирование*

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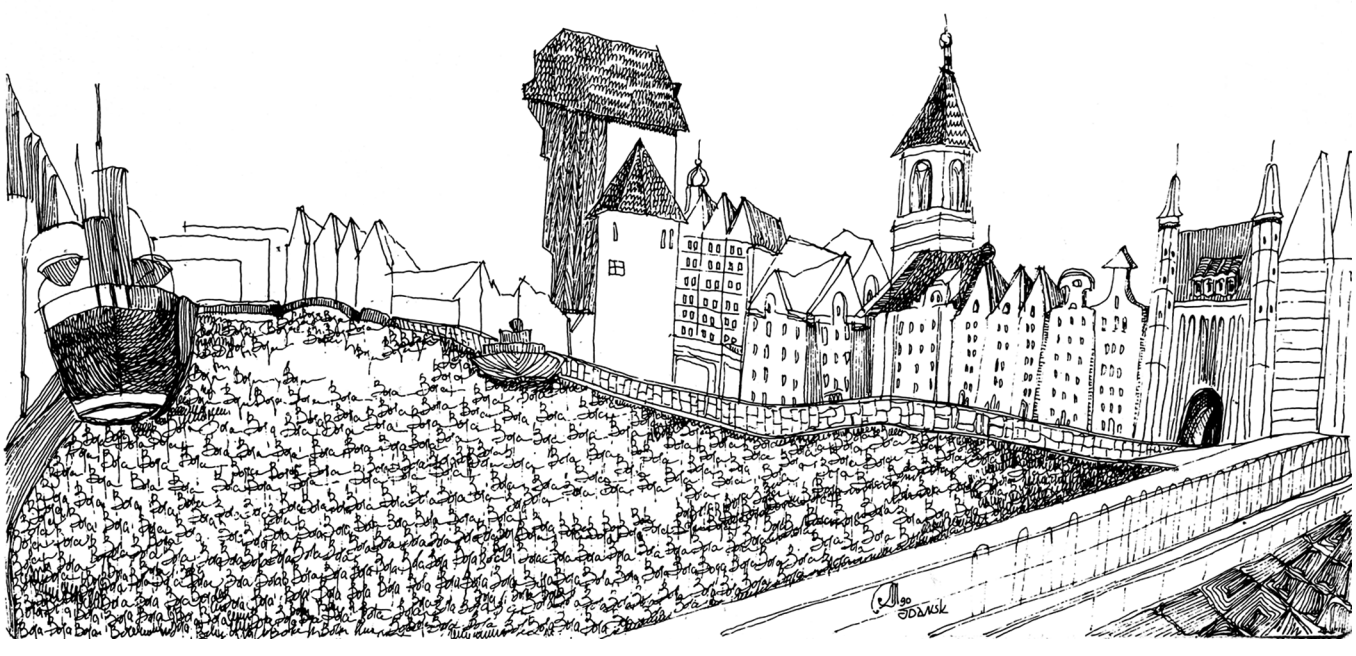
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For citation: Yankovsky A.V. Urban design concepts creation for urban areas redevelopment projects. *Real Estate: Economics, Management*. 2025; 2:13-18.

Для цитирования: *Янковский А.В.* Urban design concepts creation for urban areas redevelopment projects // Недвижимость: экономика, управление. 2025. № 2. С. 13–18.



Гданьск. Верфи. Офорт