

REHABILITATION OF BROWNFIELD SITES DECLARED AS A CULTURAL HERITAGE: OPPORTUNITIES AND CHALLENGES - CASE STUDY: SUGAR FACTORY IN BELGRADE

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ABSTRACT

Rehabilitation of abandoned industrial heritage sites can be a special opportunity, challenge and a driver of new possibilities for city development. Numerous examples of conservation, restoration and repurposing of such locations that have been implemented so far, demonstrate significant development potentials, that have influenced the culture, education, environmental, social and economic aspects of the development of the respective area. A case study in this paper is the Sugar Factory in Belgrade, which was declared as a cultural monument. The factory site is a unique industrial and urban area, located in the spatial cultural and historic ensemble of outstanding value "Topčider". The Sugar Factory is a monument of industrial development of the country and urban development of Belgrade and one of the few preserved factory sites of the late 19th century. The oldest buildings in the area are also architecturally the most valuable. Common to all buildings in the area is vulnerability due to inadequate use, non-maintenance, neglect and decay. In order to preserve the inherited monument values and popularize the rehabilitation of industrial architecture, it is necessary to improve and recover the Sugar Factory, with the affirmation of the architectural and urban values of the area and its historical features. Starting from the premise that this cultural heritage should be treated as a unique architectural and urban site which, with adequate conversion and reconstruction, can earn a significant place in the tourist offer and cultural life of the city, the paper will consider the negative effects that result from withholding the current situation as well as problems to refurbish this site as a whole.

Keywords: Brownfield sites, Rehabilitation, Cultural Heritage, Sugar factory in Belgrade

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INTRODUCTION

Brownfield is any previously developed and used land that was physically or materially abandoned and environmentally polluted due to economic-financial or other reasons, requiring investments for quality reuse. Brownfields present a highly prevalent global phenomenon, primarily related to changes in economic structure in developed countries of Western Europe and North America, as well as transitional countries of Central and Southeastern Europe (Bijelić, 2016). Almost all countries with a rich history of industrial heritage have faced this problem. Researchers have analyzed the typology and morphological development of industrial heritage, as well as the potentials and opportunities for sustainable regeneration (Nepravishta, 2015) and the development of urban strategies for the transformation and reuse of post-industrial areas (Ozturk, Cahantimur, Beceren Ozturk, 2013). At the global, national, regional and local levels, brownfields are associated with large spatial and urban problems with serious impacts on the economy, society, landscape and environment. However, brownfields present a huge unused potential for overall socio-economic development. Investing in brownfield sites in urban tissue is of great benefit to both the city and the investors. One of the key levers of sustainable brownfield regeneration is certainly the profit base of transforming neglected spaces and facilities into new, attractive and multifunctional environments, thus enhancing the character of the place while respecting the specificity of the local environment. In this paper, the term rehabilitation refers to a series of repairs and interventions on existing buildings that bring them closer to the modern usage requirements while preserving their original characteristics and adequate repurposing. In exactly similar area, which was once a part of the city's suburb, there is a historically and culturally valuable but neglected industrial complex "Sugar Factory", designated as a cultural monument, recognized from the aspect of brownfield regeneration as a great potential for the development of a new city unit of high ecological, cultural and aesthetic values.

BELGRADE'S INDUSTRIAL HERITAGE

Belgrade's industrial heritage testifies to its past, urban founding and development, production methods and economic activities, social changes and historical processes of social emancipation. Namely, industrial facilities were created in the context of historical circumstances (the struggle for liberation from Turkish rule, the emergence of an independent Serbian state after the Berlin Congress, diminished Turkish and increased European influence, the Customs War, which required a departure from the Austrian and entry into other markets), measures that Serbia took in terms of stimulating domestic investment, geographical benefits (proximity to road, rail and navigation infrastructure), which made the purchase of raw materials and the shipment of finished goods shorter. The first industrial complexes in Belgrade were built in the late nineteenth and early twentieth century near the Danube River (Belgrade Wool Combine, Belgrade Cotton Combine, Kosta Šonda Confectionery Factory...) and the Sava river (Royal Serbian privileged sugar factory, Mill of the First Bread Joint Stock Association...) (Tasić et al., 1995, Lukić, 2016).

At the same time, infrastructure facilities were being built for the purpose of general modernization of the city (water supply system was put into operation in 1892, Dorćol electric power plant with electric network in 1893, electric tram in 1894). Electrification also

contributed to an increase in processing plant capacities, and the procurement of the then modern equipment made the industry productive (Petrović 2001). Work in factories contributed to the creation of a working class, and this initiated purpose-built housing. The development of banking and the influence of foreign capital were significant in the industrialization process until the First World War, which brought great devastation, and consequently many industrial facilities and technological equipment were damaged. The post-war reconstruction of the industry was partly aided by war reparations through the delivery of technological equipment (Marković, 1992). The period between the two world wars had seen the launch of some significant building complexes: IKL – Industry of Ball Bearings (First Serbian Aircraft Factory of Živojin Rogožarski), “Power and Light” thermal power station, Belgrade Clothing Company BEKO, Milan Vapa’s paper mill, Teleoptik (production of aircraft instruments), Engine Industry Rakovica, Electric power plant of Belgrade municipality and others. The Second World War brought about a system of work suited to the interests of the occupiers, and great devastation in the April and, later on, the Allied bombing of Belgrade during its liberation. The post-war reconstruction involved intensive industrialization and construction of industrial giants (Ivo Lola Ribar machine industry, Engine Industry Rakovica, “Rekord” tire factory Rakovica, Industry of Machinery and Tractors IMT, “Termoelektro” boiler industry, Prva iskra Barič Arms industry, “Mihailo Pupin” telecommunication devices factory...) (Tasić et al., 1995.,). Since the 1990s, industry has been declining in the face of economic sanctions and the breakup of Yugoslavia. The transition process, which started in 2000 and has not yet been completed in 2019, destroyed the remains of the industry and left facilities in a devastated state and bankruptcy processes that were resold through the bankruptcy estate often fell prey to future investors for construction in the acquired locations. Although industrial heritage is the result, i.e. an integral part of historical processes, and therefore the topic of a great deal of historical literature, its research and data systematization based on those studies is of a relatively recent date (ZZSKGB, 2009., Kulenović, 2010). Identification, research, categorization and authentication of industrial heritage as cultural property are a prerequisite for a more adequate concern and their preservation in a suitable form thus establishing a social interest as dominant over individual interests of investors who are often more interested in their attractive locations (old city, the Sava and the Danube waterfront) than their rehabilitation.

CASE STUDY – SUGAR FACTORY IN ČUKARICA

The Sugar Factory in Radnička Street 3 and 3a in Čukarica, is the first industrial architectural complex in the City of Belgrade to be designated as a cultural property (Decision, “Official Gazette of the City of Belgrade”, No.23 / 84). It is one of very few of preserved factory complexes from the end of the 19th century in Belgrade, important for understanding and monitoring urban development of Belgrade, since its construction conditioned the establishment of Čukarica as workers' housing. Also, the Sugar Factory is an integral part of the cultural and historical unit of Topčider, which has been identified as a cultural asset of exceptional importance for the Republic of Serbia due to its special natural, aesthetic, cultural and historical values. It is located in its northern part, on the bank of the Sava River, more precisely the Sava estuary (Zimovnik), in the immediate vicinity of Belgrade Fair, Hippodrome, Ada Mall, a large recreational zone with special natural values - Ada Ciganlija and Ada Bridge, connecting this part of Belgrade with New Belgrade.

History

The Sugar Factory is the first industrial facility of its kind in Belgrade. Since its founding in 1898 until today, it has had several developmental stages, each accompanied by property transformation and works on the reconstruction and modernization of the factory. It was founded by the main shareholders of a large sugar factory in Regensburg: Alfred Hake, Julius Goldsmith and Max Weinshenko, who in 1900 erected the first facilities in the complex: a machine hall, a drying section, clerks and workers' apartments and a head office building. The first reconstruction and modernization of the factory was carried out under their management. The factory was owned by foreign capital until May 1920, when it was sequestered by a decree on the property of enemy subjects and temporarily placed under the management of the Ministry of Justice, Division for the Management of Hostile Property. In 1925 it became part of the state property and remained state-owned until the Second World War. Once again, during the state management of the factory, a major reconstruction and modernization of the factory took place in 1930-1931. The main departments of the reconstructed factory were: beet processing department, refinery, boiler section and power plant. A new noodle drying section was also built, and in response to increased molasses production, a new factory for the production of ethyl alcohol and yeast was built within the complex. In the period 1939-1940, a boiler section with turbine and generator, laboratories, workshops as well as finished goods warehouses were built within the complex. Due to the damage during the Second World War, after the liberation, a new reconstruction and modernization of the factory followed. Production at sugar factories, as well as ethyl alcohol and yeast production took place at the same time until 1983, after which sugar production was transferred to Padinska Skela, the plants at the subject location were abandoned and the equipment was transferred to a new factory or sold out. The ethyl alcohol and yeast production plants continued to operate; in 1984, they were put under the management of the newly formed company AD Vrenje. The privatization process of the apartments originally built for the needs of employees started in the 1990s. (Dimitrijević-Marković, Sretenović, 2008)

Existing state: physical structure and ownership

Numerous reconstructive works, most intensive in the period 1923-1946 and subsequent construction, resulted in the mixed building structure in the complex, both in terms of architectural values and their function. The oldest and most architecturally valuable buildings date from the foundation of the factory. The machine hall is of extremely large size, with radiating - irregular base and energetic ambience with a strikingly high chimney and makes the spatial focal point of the complex; the drying room, with simultaneously built technical material warehouse, have also been preserved, as well as clerks' and workers' flats and the administrative quarters building – which is now a restaurant. These were built similar to industrial architectural structures in the 19th century in northern and central Europe (use of brick in materialization, simplicity in facade design, reduced decorative elements, etc.). The remaining buildings were built in the same manner, but much more modestly. This design pattern has not been consistently applied only in the construction of “workers' flats”, as well as the sugar cubing section and plants and facilities related to the production of ethyl alcohol and yeast built in the later stages of the complex reconstruction.

Nowadays, it is mostly a neglected and devastated area, which does not represent a whole, either functionally or proprietary. The part that once belonged to AD Vrenje, including the part of the machine hall, is also physically separated from the rest of the complex by a wire fence. Residential buildings for former workers and clerks, now with privatized apartments that in the meantime changed owners, are spatially but not functionally, part of the complex. Common to almost all non-residential buildings is the lack of maintenance and deterioration, abandonment or endangerment due to inadequate purposes, with the exception of the theatre, with longstanding problems about ownership status, formed in one part of the machine hall. In addition to various types of damage, traces of partial, non-professional interventions are visible in almost all buildings. The valuable greenery inside the complex is untended and neglected. Several buildings that have been recently constructed for various purposes, from housing to a gas pump, additionally spoil the space (Dimitrijević-Marković, Sretenović, 2008) (Fig.1).

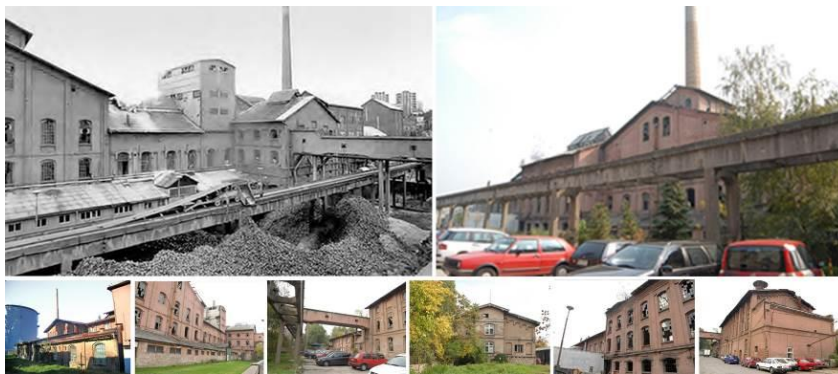


Figure 1: The machine room in time of the full production (upper left) and current state of the Sugar factory

Rehabilitation opportunities and problems

Despite its rather poor condition, the complex has mostly preserved its ambience. All the facilities, regardless of their condition and individual values, participate in its formation and testify to the establishment of the factory. The above points to the necessity of planning the actions and preserving the complex as an integral whole with all its buildings. This is supported by all relevant institutions, the Republic Institute for the Protection of Cultural Monuments, as the competent institution for protection, which set this requirement as a condition when drafting an urban plan for this area, the Urban Planning Institute of Belgrade, which incorporated this condition into the Plan, the Belgrade City Assembly which adopted the Plan. The Plan emphasizes that the space represents a valuable architectural ensemble with undoubtedly needs to be preserved as a unique architectural-urbanistic unit, which, adequately repurposed, can represent a great tourist potential for the City.

Plan basis for interventions in space

In the Detailed Regulation Plan for the spatial cultural and historical Unit Topčider - Phase II, Unit 1, (Official Gazette of the City of Belgrade, No. 98/16), the factory space is defined as a construction complex, with eighteen building lots for other purposes, of which seventeen building lots were formed around the existing evaluated buildings, whereas one is intended

for the construction of a new facility, and one public lot covering the remaining space intended for open and green spaces in the function of the facilities in the complex. The plan permits fencing of the whole complex, except for: the building plots within the complex, their parcelling or re-parcelling and changing the boundaries of the building complex (Fig.2).

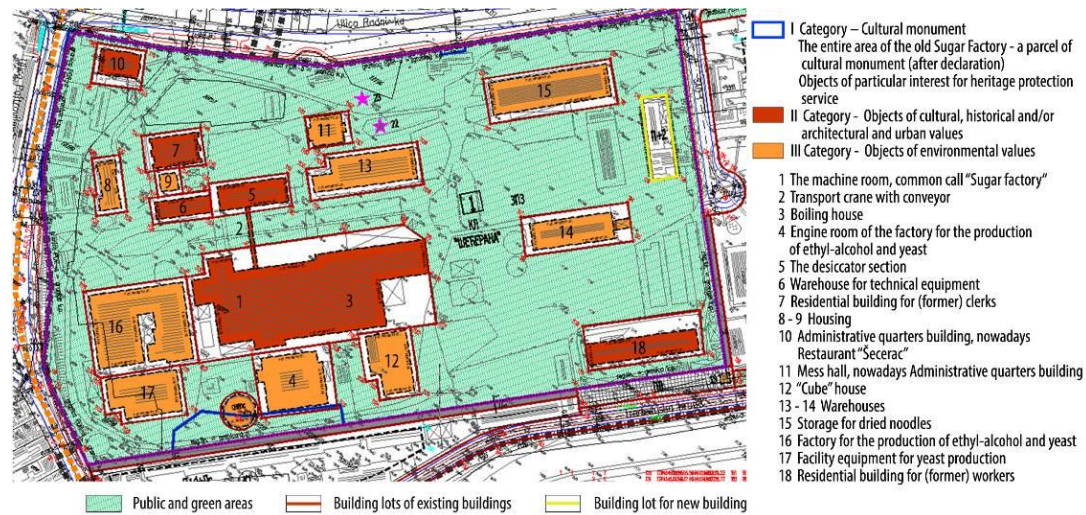


Figure 2: Sugar factory – Purpose plan area (DRP no. 98/16)

The complex, including all the buildings, is classified into several categories and possible interventions are respectively defined. The complex is classified as the category I, which requires strict protection measures with the aim of preserving the urban and architectural authenticity of the space, i.e. the environment, so it has to be treated as a single whole. The facilities within the complex, directly related to the construction and development phase of the factory are classified as Category II and III facilities. They are planned to be retained and repurposed, restored, rehabilitated and revitalized solely within the existing size and dimensions. All the remaining buildings in the complex (one historic building that has lost its value due to many transformations and newer buildings which significantly devastate space) are planned for removal. According to the plan, the retained buildings will be repurposed as facilities with cultural and cultural education facilities: museum exhibitions, galleries, theatres, cinemas, libraries, art and educational workshops, etc. On a smaller scale (up to 20% of each individual building), introduction of commercial contents is allowed, such as: catering facilities, bookstores, souvenir and promotional material shops, etc. In addition to the contents and purposes of the complex, within the clearly defined building lines, the construction of a new building is allowed, P+2 height and an area of up to 2400 m².

Problems or what should not be overlooked

The plan gains its final sense only through realization. This requires large financial resources and a clear goal, i.e. political will. In the case of this complex, in addition to the funds for the renovation and repurposing of evaluated buildings and adequate landscaping, it is necessary to provide financial resources, but also to find ways of solving problems related to the ownership structure in this area. Namely, social changes led to the actions that followed a logical sequence of development, i.e. improvements and modernization of the factory and were logical and desirable for the production process and the rise of the factory – today,

they result in a large number of individual owners in the area, which has become a kind of aggravating circumstance and one of a number of obstacles for the rehabilitation of this complex. In order for it to be renewed and to acquire new cultural content defined by the plan, it is necessary to functionally reconnect it to the whole, i.e. buy up, renovate and repurpose all of the evaluated facilities of both factories and a large number of privatized apartments in residential buildings and remove facilities that devastate the space. Addressing this problem additionally burdens the operational aspect and financially increases already huge costs of rehabilitating brownfield sites, as well as facilities and complexes. As a solution, the Urban plan allowed the possibility of phase realization with the obligatory unique perception of the complex at each stage of plan elaboration (public competition, mandatory verification of the preliminary design for the zone as a whole, project documentation), provided that the proposed solutions enable independent functioning of each phase of realization. With the already expressed political will to renovate the complex, this could be a way of overcoming the problem. However, it also points to some caution in case of the lack of consistency of initiated rehabilitation and ensurance of uniform management of the complex later on.

Following the adoption of the Plan, in accordance with its provisions, Belgrade Land Development Agency, in cooperation with the Association of Architects of Serbia, launched an open, poll based, single staged competition for an urban-architectural solution of the wider area of the Hippodrome, which included the space of the Sugar Factory. Participants were required to offer architectural solutions for the construction of a new facility and the landscaping of the complex. Architectural solutions for the revitalization and reconstruction of evaluated buildings were not the subject of the competition, but merely the submission of proposals for their contents that would agree with the purpose and contents of the open public space whose design was the subject of the open competition. Suggestions for their rehabilitation have been left for another phase, possibly one facility at a time, although the condition of most facilities is such that any delay leads to further decay. Buildings of more modest dimensions and architectural values in the complex are particularly sensitive, and their restoration, unless they completely collapse in the meantime, could be called into question. This thesis is supported by the situation with many brownfield sites in Belgrade where existing complexes are being cleared to allow space for new construction, with the possible retention of one building, but only if the space enjoys some form of protection.

CONCLUSION

The basic prerequisites for the successful rehabilitation of abandoned, but architecturally and historically valuable industrial complexes are their timely identification and their designation as cultural property, with clearly defined values and measures of protection of those values, respected by urban planners and incorporated into the urban plan, which, as a rule, should be devised and adopted before potential investors get interested in the complex – these are distinct messages of the case study described. Another prerequisite is clearly expressed political will to support and carry out the planned rehabilitation and a strong, responsible and conscious community to encourage and control it.

An affirmative attitude towards architectural heritage, including industrial heritage, ensures cultural continuity, the process of identifying and strengthening individual and collective

identity, and the promotion of social, economic and other values. Cultural heritage, as a set of physical artefacts and intangible attributes of a community, is the guardian of cultural codes that define the authentic creation of a particular space. In this respect, the sustainable development of cultural heritage, the fostering of ideas and research approaches regarding the spatial-physical aspects of the built environment and urban development, as well as the consistent realization of rehabilitation, are of the utmost importance.

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