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Problems of Garden-City Protection in the Suburban Area of Warsaw

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Abstract. The paper aims to present the issues of protection of settlement with features of garden-cities in the suburban area of Warsaw. Howard's idea of combining the advantages of the city and the village in one was so popular that it also affected Warsaw. In the area of Warsawcity, as well as in its outskirts, garden-housing estates were built or planned. To this day, in the suburban landscape, these areas are distinguished by a vast content of greenery and small-town character, but the investment pressure is so intense that changes are taking place at a dynamic pace. Often, even the legal protection of these values is not sufficient to resist these urban processes. Thus, the purpose of the article is to show the problems of protecting settlement systems with the features of garden cities in the suburban area of Warsaw. The research uses the case study research method and critical analysis of formal and legal conditions. Interviews with residents were additional support. The examples given have shown that systems that have been protected for many years, with more stringent regulations, are in a much better position than places whose inheritance is being tried to preserve by introducing regulation now. In many cases, social resistance is so strong that even with evident advantages, it is not possible to introduce protective laws.

1. Introduction

This paper includes conclusions drawn from the conducted analysis of plans for the spatial development of selected examples of Subwarsawian garden-cities: Podkowa Leśna (established in 1925) and the districts of Otwock - Soplicowo and Sródborów. A vital element of the research was also an analysis of the legal status with the form of conservation of areas with a city-garden origin. Spatial development plans from 1970-2019 (in the case of Podkowa Leśna) were analyzed, and concerning Otwock, planning documents of the last 20 years.

The analysis aimed to establish whether the current documents include postulates for the development of localities taking into account the sustainable development of the studied assumptions and their sufficient protection.

2. The origins of garden-cities in the interwar period

When Alfons Gravier, a Polish architect educated at the Parisian Écôle des Beaux-Arts, presented on a December evening of 1911 in the Warsaw town hall "The pattern for the development of Warsaw and its vicinity", considered today as the progenitor of the modern regulatory plans of the capital, the idea of a garden-city was already well known to Warsaw architects-urbanists and developers. [1] In 1909, the Commission for Garden Cities at the Warsaw Society of Hygiene was established, and in 1910, an



Exhibition of Garden Cities was held in Warsaw, where examples of European achievements in the field of establishing such assumptions were displayed. It is therefore not surprising that Gravier designed the development plan of the Polish capital based on the Howardian *green belt*, a ring of agricultural land around Warsaw, and another range of extensive development intended for the establishment of gardencities (figure 1). Until the outbreak of the First World War, Subwarsawian gardencities included in the plan of Greater Warsaw of 1916, were pursued only fragmentarily, or their erection was not started at all. Such was the fate of the garden-city of Ząbki designed by Tadeusz Tołwiński (1912), the gardencity of Młociny designed by Ignacy Miśkiewicz (1914), New Warsaw, the implementation of which had been prepared since 1910, or Kolonia for widows and orphans of reservists (1915) [2].

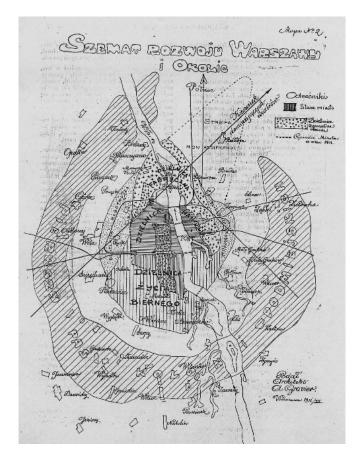


Figure 1. Warsaw. Alfons Gravier's first sketch of the development plan, 1911. Scheme of encircling the built-in areas in the *green belt* and forming an almost full circle of lands devoted to future settlements [1]

Owing to the economic meltdown in construction caused by World War I setback, interest in the garden-city movement in Poland was halted, but in the 1920s, there was another wave of establishing garden-city settlements near Warsaw. They were founded as a result of the activity of parceled estates near Warsaw, competing for potential buyers of plots. Among the areas parceled at the time, it is necessary to mention those sites whose functional program and plan, at least in part, referred to Howard's idea; at that time, areas near Warsaw called garden-cities were used only as an advertising gimmick.

The following are aspiring to be Subwarsawian garden-cities, and their development began in the interwar period: Milanówek (1899, garden-city from "natural development"), Brwinów (from 1902, a garden-city "from natural development"), Konstancin (1917, a health resort), Śródborów/Otwock (1922,

city-forest park), Zalesie Dolne (1925), Soplicowo/Otwock summer resort (1925), Ostoja Pęcicka (1926-28), Włochy (1928), Dąbrowa Leśna (l. 20 20th century), Dąbrowa Leśna (l. 20 20th century), Zalesie Górne (1930), Komorów (1930), Magdalenka/Sękocin (1933), and Boernerowo (1932-1936, garden-suburb), Czerniaków-Sadyba (1924, established within the administrative boundaries of Warsaw). All these settlements were established near railways, commuter railways or tram lines [3].

3. Podkowa Leśna, land parceling since 1925, author of plan Antoni Jawornicki (figure 2)

The greatest renown was won in the interwar period by Podkowa Leśna (hereinafter Podkowa), founded as a garden-city in 1925 on the land of the parceled estate of Warsaw industrialists - the Lilpopowie. Podkowa became the most prominent example of a garden-city near Warsaw, not only due to the fact that it was built in a picturesque forest, and because it was announced that the settlement would be equipped with all the amenities needed by future residents: a market with shops and restaurants, a church, cultural institutions, shared sports grounds and public parks, but mainly as it offered a convenient connection with the capital by a purpose-built access railway to facilitate the sale of parceled areas along with the traction. Podkowa is located 29 km from the center of Warsaw as the crow flies, the travel time to the city center by train is approx. 45 minutes.

The success of the project was also determined by the fact that representatives of the Warsaw intelligentsia, the world of culture and plutocracy settled in Podkowa, and built houses here, initially treated as a suburban villégiature. And although it turned out that the area of the future garden-city is partially wet, the village conferred a reputation of an excellent and healthy place for the construction of a second house by affluent Warsaw residents.

The Podkowa parcellation plan, designed by the renowned Warsaw architect Antoni Jawornicki, did not stand out for its originality of solutions.

The urban plan of Podkowa followed the pattern popular since Raymond Unwin's 1912 visualization of the "garden-city principle applied to the suburbs" [4], showing a city with a radial-concentric design with characteristic rays of the main transport arteries extending from the location of the central square initiating the structure. In the settlements established in accordance with Unwin's scheme, the role of the center was usually played by the square at the station stop. Such a solution can be found in Prozorovka near Moscow (1912), [5], in the Subwarsawian garden-city of Włochy, and many parceled Subwarsawian settlements, and even in plans of the Japanese garden cities imitating English solutions [6]. In Podkowa, the area for the future center of the settlement was reserved at the intersection of radial streets, where the WKD railway stop lies until today.

The uniqueness of Podkowa was ultimately determined by the values of its natural environment and the high forest greenery preserved during the parceling. Podkowa was established partly on forested land (the parceled area was approx. 441 ha), bordering from the south-east with the Młochowski Forest (approx. 600 ha). In the northern part of the settlement, a forest strip in the shape of a croissant, or a horseshoe, excluded from the parcels was preserved; that is how the settlement allegedly got its name (author's note: Podkowa is literally translated into horseshoe in Polish).

The elements referring to Howard's ideas include the central park, arranged along the railway line in the southern part of the settlement, where the area of dunes covered with pine forest, partly swampy, was not suitable for parceling. Preserved to this day in its pre-war borders, the City Forest Park (approx. 14 ha) housed the Sports Club Palace, known as the "Casino" (1927) and sports grounds [7].

The widespread plots of Podkowa (1000-2000 m2) were developed before the Second World War, mainly with small single-family houses, but also with several magnificent homes. In spite of the intense

construction traffic, by 1939, there were about 300 houses built in Podkowa, and the forest character of the settlement was fully preserved.

This was due to the rules applicable to every buyer of a plot, similar to the English covenants, which forbade buildings to be erected on more than 20% of the plot area. In the name of common good of the residents, it was forbidden to carry out any activities that were burdensome for the residents on the plots, the requirement to leave the strip free of buildings at the front of the plot was to be respected, and the plot was to be fenced only with a "transparent" enclosure or a hedge. It was also not allowed to perform a second split of the primary plot.

These – for Poland – highly restrictive rules, signed at the time of the purchase of the plot, caused controversy from the beginning, but the general population obeyed them, understanding that the settlement would lose its character as a garden-city upon its transformation into a banal town.



Figure 2. Podkowa Leśna. The map of Garden-City in early 1930¹

4. Conclusions from the analysis of the spatial development plans of Podkowa Leśna – 1945-2019. Evolution of protective measures as a result of the social participation of residents

After the Second World War, in the 1970s, an attempt was made to change Podkowa Leśna into a recreation area of Warsaw's population. Fortunately, the plans for the development of the settlement prepared at the time were not attained – an amusement park was planned on the site of the City Forest Park, which would blur the private character of the village. The convenient travel time to the center of Warsaw, shortened to about 30 minutes thanks to the electrification of traction, encouraged the contemporary planners to produce plans to intensify the development of Podkowa Leśna so that the settlement would become another Subwarsawian bedroom-district. It was also planned to place numerous production plants in Podkowa. The "intelligentsia" character of its community was to be deliberately obliterated. The lack of a definitively approved spatial development plan for Podkowa and

¹Original plan in the Archives of the Society of Friends of the Garden-City Podkowa Leśna, folder: maps, plans not signed.

the economic crisis of the late 1970s resulted in the rejection of the concept that would compromise the spirit of the place.

Thanks to the efforts of the local community, since 1981, the urban arrangement of Podkowa has been entered in the register of historical monuments, and it is subject to strict conservation protection due to the outstanding values of the plan and excellent preservation of the original structure of the village. In 2004, the protection of the garden-city was extended to natural monuments, including avenues lined with rows of monumental trees.

An analysis of the materials published in the local press – two magazines have been published in Podkowa from its inception – demonstrates that an exceptionally coherent group of local patriots, composed mainly of descendants of the first owners of the Podkowa real estate, has developed here.

Already after the change of the political system (in 1989), the local community protested in 1995, when a spatial development plan was produced, which allowed developers to freely invest within its historical arrangement, and when there were plans of significant expansion of one of the street radiuses to the parameters of the communication route. As an outcome of the referendum, the mayor of the town who preferred this direction was dismissed.

The Podkowa community does not intend to create an "open-air museum" in the village, as it is afraid of "freezing" its structure and losing local taxes when the village starts to stagnate. A practicably noninvasive development of the garden-city is postulated in the press and during meetings of local organizations. On the other side of the spectrum are residents who would like to see a more intensive development of the town, i.e., to allow the construction of buildings with dimensions larger than the historical covenants, especially in the central portion, near the market square and the station stop. Poor examples of erecting buildings on the plots of former owners by immigrants, and usually wealthy new residents, of a scale, significantly exceeding the parameters specified in local plans, breaking the prohibition of fencing plots with high walls, cutting old trees on plots, building swimming pools, arbitrary erection of additional buildings, including huge garages, accelerated the commissioning of a new framework for the Podkowa spatial development plan, which was completed in 2019 [8].

5. Otwock districts of city-forest park character

One interesting example of introducing the idea of a garden-city to the Warsaw suburbs was the parceling of districts of Otwock - Soplicowo and Śródborów. Otwock, located approx. 27 km from Warsaw to the south-east, had a convenient location and development potential for the localization of summer resorts. It was well connected with the capital; owing to a railway built in the 19th century, it offered good conditions for the development of suburban housing estates. Already in 1880, the first summer resort was established at a distance of 3 km from the train stop. A well-known Polish drafter, illustrator, and painter Michał Elwiro Andriolli saw the investment potential of this place and built a colony of wooden holiday homes, which were distinguished by such a specific architectural expression that they began to be referred to as the "świdermajer style." Favorable for recreation and relaxation, but also for purely health and convalescence reasons, the climate immediately attracted the attention of new investors. The localization of treatment and sanatorium facilities (the first pulmonary diseases sanatorium established by Dr. J. Gejsler in 1893) at the turn of the 19th and 20th centuries have also helped secure Otwock's spa profiling, which marked the beginning of the spa district. The growing importance of Otwock was also evidenced by the fact that it was granted civic rights in 1916 and health resort status in 1923. In the 1920s, Otwock was split into the so-called regions, a spa district intended for the higher social classes, a peasant area including today's industrial, commercial and handicraft downtown, and the borderlands covering the areas to the north and west of the Świder River, where mercenary workforce lived. From the beginning of the 20th century, the development of the town was accompanied by a considerable influx of Jewish people. In the 1930s, already as a dynamically developing health resort. Otwock incorporated the neighboring communes of Jabłonna village,

Soplicowo, and Śródborów. For this enlarged area of the city, in 1935, Adam Paprocki and Władysław Brzozowski prepared a program outline of the general plan of Otwock (figure 3), the features of which clearly refer to the then-popular idea of a garden-city. The newly incorporated districts of Soplicowo and Śródborów were arranged based on radially diverging streets, joined concentrically. According to Howard's idea, the entire system was threaded onto the railway line. Within the meaning of the art, the parceling assumed large plots of land with a considerable share of greenery. As this area was abundantly overgrown with pine trees, the character of a city-forest park was naturally obtained. It is noteworthy that an axially-planned clerkly colony was established in 1921 in Soplicowo, according to the design of F. Michalski [Kałuszko], and 1921 saw the production of a comprehensive elaboration of the city-forest park Soplicowo according to the design of Zdzisław Kalinowski, the shareholder of the Association of Garden Cities and Health Resorts in Poland [9].

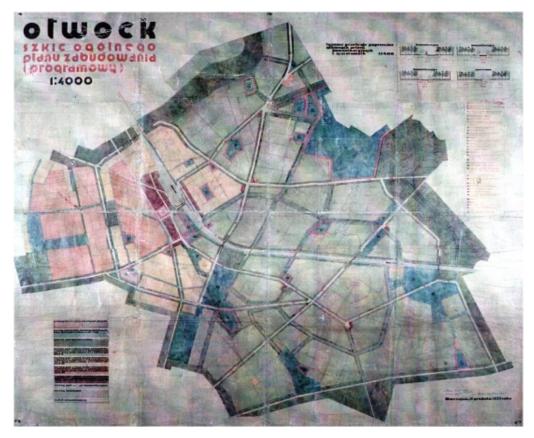


Figure 3. Otwock. Draft of the general development plan (program), 1935, original scale 1:4000 (Collection of the National Archives in Warsaw, signature K II 201)

6. Public interest vs. local interest

Although it was ultimately impossible to implement the entire pre-war plan, the street grid and the forest character of these areas remain to this day. Also, single objects scattered around this area, including modernist villas designed by famous Polish pre-war architects, remind us of the historical genesis of this place. No wonder that attempts were made, both local – of city activists – and institutional ones to protect these areas. The last such effort undertaken in 2010 was the initiative of the Mazovian Voivodship Conservator of Monuments who, under Polish law, could ex officio initiate the procedure of entry into the register of monuments [10]. The conservator's request covered the urban arrangement of Otwock in the districts of Świder Zachodni, Śródmieście, Soplicowo and Śródborów, shaped in the years 1877-1939, with an area of approx. 15 km2, which constitutes ca. 31% of the overall city territory. When determining the areal extent, the values of the cultural landscape were taken into account;

development in connection with the landscape surroundings is of great importance for it. The layout and old stock of trees were considered a valuable contribution to Soplicowo. Similar values were accentuated in Śródborów adjacent to Soplicowo, emphasizing at the same time the preserved valuable architectural resources. The indicated areas fully corresponded to the statutory definition of the urban layout as "a spatial urban or rural arrangement, containing building complexes, individual buildings, and forms of designed greenery, arranged in historical ownership and functional divisions, in the network of streets or roads" [10]. The proposal stresses that the layout presents both historical, artistic, and scientific assets.

The stated view of city authorities on this decision was unambiguous and categorical [11]. The focus was put on demonstrating the burdensomeness resulting from entering such a large area into the register. It was indicated that after entry into the register, historical and antique characteristics would be protected and cared for by way of consultation: division of land, green zones (borders, compositions, flora), organization of streets (routes, width, roadways, pavements, green belts-avenues of trees), residential housing and farm buildings (size, the shape of the structure, including the roof, design, materials, style) and small architecture (fences and lighting, figures and chapels, also on private possessions). Also, in the scope of introducing new elements, verification would be required by agreements with the Mazovian Voivodeship Conservator of Monuments, including in relation to roads, greenery, buildings and technical structures (surface, building lines, dimensions, architectural form, the composition of elevation), overhead technical infrastructure and advertising materials. It was also stressed that any construction works in the protected area would require a building permit. With the necessity for supplementary arrangements, all investment procedures in the protected area would obviously be extended in time and somewhat complicated, as argued. This would impose additional costs, i.e., extended time of realization of the investment. It was also noted that the indicated area was not improved with the media, which would greatly complicate any investments related to rectifying this situation. The city authorities have stressed that they are pursuing a policy to protect the valuable parts of the urban landscape, mentioning the Local Revitalization Program Plan, the Communal Program for the Protection and Care of Monuments, and the provisions of the local spatial plan². It was indicated that a large portion of the area proposed for protection be covered by local spatial development plans, perhaps already adopted or in the course of drafting. It has been pointed out as well that green zones in the area of the proposed protection, i.e., the districts of Soplicowo and Śródborów, had plot areas above 2,500 m² and over 5,000 m², which had just been secured by provisions in local spatial development plans. The Study of Conditions and Directions for the Spatial Development³ was also referred to; although it is not a law like the Local Spatial Development Plan, but rather constitutes merely a definition of spatial policy and principles of local utilization for the entire commune, it contained provisions recommending the protection of those areas. Moreover, it was declared that historical and urban analyses would be carried out, and their result would be the designation of the zones of the Cultural Park. That said, although the Study updated in 2014 actually included provisions about the Cultural Park⁴, they took up only small portions of the city, and moreover, they remained as postulated in the Study. The registration of historic urban arrangements would result in the necessity to obtain building conservation guidelines for the design, and the obligation to agree to the design with the historic buildings inspector. It was stressed that such a safeguard would introduce many constraints and would not involve the possibility of obtaining subsidies for investors. It is worth mentioning that only an entry in the Register of Monuments would enable ones to arrange for a subsidy of up to 100% of construction values from the Ministry of Culture and National Heritage and the Province Historic Monuments Conservation Office. On the other hand, entry into the Municipal Register of Monuments -

 $^{^2}$ In Poland, the local spatial development plan is an act of local law that specifies the purpose, conditions for land development, as well as the location of public investment.

³ In Poland, a document prepared for the whole area of the commune, defining in general the spatial management policy and local spatial policy.

⁴ Created to protect the cultural landscape and to preserve areas that excel in terms of landscape with immovable cultural monuments characteristic of the local construction and settlement tradition.

and there are decidedly more such objects in Otwock - would not give authority to applying for funding for construction works, which would mean no possibility of a subsidy. It was also argued that a part of the area of Soplicowo overlaps with the areas covered by natural protection of the Masovian Landscape Park. The city authorities also sought to demonstrate a great factual weakness in the manner of delimitation of zones of the historical urban arrangement, which, as they proved, did not correspond to the factual state and the most valuable existing resources. A disadvantage was also the uniform treatment of the entire area with regard to the scope and its protection, as well as the absence of the need to adopt local spatial development plans in this area. Explicitly advocated was an alternative solution introducing the areas of the Cultural Park, emphasizing that its territory would be demarcated with the participation of public consultations and the Masovian Voivodeship Monuments Conservator. It has been argued that thanks to this solution, depending on the value of resources, separate areas could be dealt with individually and that it would be obligatory to develop a local spatial development plan, taking into account the Park protection plan [11].

7. Results and discussions

As for Podkowa Leśna, analyzing the Study for the spatial development plan of 2019, in which priority was given to the necessity to preserve the outstanding values of the town as an inviolable cultural heritage and to protecting the local nature, and which was to outline an action program until around 2035, our conclusion is that there is still no vision of meeting the postulate of sustainable development of the town, adopted as the leading action program of the Podkowa authorities in 2013.

The Study lacked a key decision relating to the ways of developing the central part of the town. Determining how to develop the layout, whose advantage is an intimate scale and saturation with greenery, was ultimately left open. Whether in the announced detailed plan (local plan), it will be proposed to create a network of compact "city" frontages in the center, or whether the picturesque and unobvious character of the center with detached houses embedded in greenery will still be maintained - is not defined. On the other hand, it was allowed to adjust the degree of development of the plot to the specific schemes set individually in future plans, agreeing to grant permits for the development of the plot of up to 45%. This raises concerns about maintaining restrictions in force in this respect from the beginning of the town's existence.

In turn, in the case of Otwock, this - as it seems - substantive discussion showed the strength of the local authorities in its clash with the Office of Old Monuments Conservator and, as a result, the weakness of the system of protecting valuable elements of the urban cultural landscape. All this showed that the principal argument with such decisions is to a large extent, economic consideration. The argument of time-retracting and increasing investment costs has a burdensome effect on this type of facility.

It is worth emphasizing the uniqueness of the Otwock location, which, thanks to the large stock of green areas including the Masovian National Park, has preserved its forest character to this day, especially in the southern areas. However, progressing investment pressure poses a major threat to these stocks. Also, the wooden architecture of the Świdermajer style, although appreciated among experts in wooden architecture, is threatened. Its gradual degradation and replacement with modern buildings, evidently estranged from the traditional style, is observed. Thus, the landscape proving the identity of Otwock is increasingly fading. Otwock's experience perfectly exposed the weakness and deficiency of legislation and the still low social awareness of the increasingly vanishing values that determine the identity of the place, i.e., something that we should all strive for.

8. Conclusions

Unfortunately, there are no signs of a raised awareness of co-responsibility for urban space in Poland. The protection of natural and historical value has not been popular in local government circles, as it does not translate directly into finances, and long-term benefits are beyond its interest mainly due to the

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handover of power. Furthermore, there is a lack of social awareness about the importance of protecting the cultural and natural landscape. Unfortunately, sometimes the remaining resources of areas with characteristics of a garden-city, or rather in the case of Otwock, a city-forest park, are treated instrumentally. It often appears that the provisions of the local spatial development plan are not sufficient to protect the landscape, although they still constitute a better form of legal protection than decisions on land development conditions.

The Polish spatial legislature still lacks a definition of what a "garden-city" is. Plans prepared for localities with the characteristics of a garden-city are treated as such of "standard" localities. Protection of the locality against the pressure of development understood as the staking of new streets, the secondary parceling of plots, and the intensification of development, is possible only thanks to the entry of the spatial layout and selected architectural objects into the register of monuments, and the protection of natural values. However, this does not allow for the presentation of future plans for exceptional towns that do not necessarily have to "develop" – they can remain an improved version of the historic gardencity, a witness of the era of their creation, better functioning thanks to improved infrastructure, the use of renewable energy and the creation of local jobs, due to the intellectual potential of its inhabitants.

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References

- [1] "Budowlany Wieczór Dyskusyjny", *Wiadomości Budowlane*, Warszawa, no. 12, pp. 255-258, 1911 (in Polish).
- [2] A. Szmelter, "Swojskość w polskim modelu miasta-ogrodu. Polskie wczesne rozwiązania na tle zagranicznych przykładów", *Przyszłość rzeczy minionych*, vol. 2, Oficyna Wydawnicza Politechniki Warszawskiej, pp. 182-191, 2019 (in Polish).
- [3] A. Tyszka, "Miasta jak ogrody", Świętokrzyskie Towarzystwo Regionalne, Zagnańsk-Podkowa Leśna, pp. 41-45, 2012 (in Polish).
- [4] A. Czyżewski, "Trzewia Lewiatana. Miasta-ogrody i narodziny przedmieścia kulturalnego", Warszawa, p. 44, 2009 (in Polish).
- [5] A. Szmelter, "Początki urbanistyki współczesnej. Doświadczenia zagraniczne a środowisko warszawskich architektów i urbanistów przełomu XIX i XX wieku", Oficyna Wydawnicza Politechniki Warszawskiej, p. 186, 2019 (in Polish).
- [6] S. Watanabe, "The Japanese Garden City", *The Garden City. Past, present and future*, E&FN Spon, London, p.77, 1992.
- [7] G. Gratkowski, "Architektura Podkowy Leśnej, Biblioteka Podkowiańska", vol. 3, pp. 68,69, 2007 (in Polish).
- [8] "Studium uwarunkowań i kierunków zagospodarowania przestrzennego miasta Podkowa Leśna. Część 1. Uwarunkowania zagospodarowania przestrzennego", (aut. G. Chojnacki, K. Zantonowicz, M. Potocka, P. Starczewska), Podkowa Leśna [Online] 2019 [accessed 05.07.2020]. Available at: http://podkowalesna.pl/wpcontent/uploads/2019/09/01_TEKST_STUDIUM_uwarunkowania_do_wylozenia.pdf
- [9] B. Chmielarska-Łoś, "Układ komunikacyjny a plany parcelacyjne przy linii otwockiej", Mazowsze, 1994, no. 2, pp. 21-25, 1994 (in Polish).
- [10] The Act of 23 July 2003 on the protection and guardianship of monuments (OJ of 2003 No. 162, item. 1568 later amended).
- [11] The stance of the authorities of Otwock on entry of the historic urban arrangement into the register of monuments [Online] 2010 [accessed 2020.07.17] Available at: http://archiwum.otwock.pl/asp/dokumenty/2010/stan_miasta.pdf