

SPATIAL TRANSFORMATION OF DECOMMISSIONED COAL MINES AREAS – CASE STUDY OF COAL MINE “KATOWICE”

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Abstract

In Poland, for over 30 years, measures have been taken to adapt post-industrial areas, especially those related to mining. One of the crucial areas that needed to be developed was the site of the decommissioned Coal Mine “Katowice”, located in the heart of the Upper Silesian capital. Today, about 56.5% of these areas are redeveloped and known as “Cultural Zone”. On the one hand, this example shows how difficult it was to move from concepts to their implementation. On the other hand, it shows how the lack of a unified concept and spontaneous actions can partially lose the site's potential, despite relative success. This work presents the whole process of planning and transforming the postmining areas of the Coal Mine “Katowice” – from the concept to the planning phase and implementation. Due to the specificity of the research subject and the need for multilevel analysis of dynamic spatial and economic changes in a long-term perspective, the research used: a query of archival, library materials and legal acts, an analysis of plans, project, planning documentation and mine closure programs, cartographic research, field research and photographic inventories.

Keywords: Post-mining areas; Re-use of brownfields; Spatial transformations; Revitalisation of post-industrial areas.

1. INTRODUCTION

Coal was one of the most important sources of energy in the European economy. Its extraction in the Ruhr area in Germany, in Asturias in Spain, in West, Northeast, Yorkshire and Humberside in Great Britain, in Nord-Pas-de-Calais in France or in Upper Silesia in Poland contributed to the intensive economic development of these regions and to the formation of a cultural heritage [32]. With the decision to abandon coal mining and decommission mining and industrial plants, the right ways to transform post-mining areas have been sought since the 1950s [25]. Due to the strategic importance of mining regions, the process of their revitalization has been a major challenge for public authorities (at national and local levels), trade unions, and companies [48]. The measures

taken by successive governments were aimed at mitigating the negative effects of the mining restructuring process and creating a new image for post-industrial regions. Their common feature was the establishment of a dedicated institution for reclamation with regional and transregional reach, endowed with financial resources and promoting solid cooperation between the public and private sectors [25].

The IBA Emscher Park (Germany), IBA Fürst-Pückler-Land with LMBV (Germany), Etablissement Public Foncier (France), IBA Parkstad (Netherlands) are considered model examples of post-mining land revitalization [26]. However, due to individual legal, economic and social, environmental and spatial conditions, not all regions were able to implement the above solutions. Therefore, despite years of discussions and a wealth of international experience, effective tools

and best practices for brownfield redevelopment are still being sought. [36].

Today, the importance of coal in Europe continues to decline. Due to diminishing coal reserves [23, 29] and the ongoing transformation of the energy system in Europe [7–9], the conversion of mining areas is inevitable. Between 2014 and 2017 alone, 27 coal mines were closed in Poland, Germany, the Czech Republic, Hungary, Romania, Slovakia, Slovenia, and the United Kingdom [1]. Moreover, given the efficiency of underground coal mining, most coal regions are predicted to close its activities by 2030 [1], contributing to the “release” of a large amount of social, economic, and spatial resources.

To make the whole process run smoothly, the European Commission has set up the “Just Transition Mechanism”. It is designed to help member countries and provide support to mining regions. It consists of a series of financial instruments to create alternative industries and provide jobs for those who will lose them as a result of the gradual closure of certain companies (such as mines or power plants) [7]. These programs do not take into account the spatial changes that will result from the proposed transformations and the possibility of positively affecting the social, natural and technical environment through the redevelopment of brownfields [1, 4, 7, 37]. In this regard, effective urban regeneration and the protection of post-industrial cultural heritage should be an equally important goal of “just transformation” To meet the challenges ahead, all past experiences should be critically analyzed and then new individual development strategies and plans should be created [53].

In Poland, the process of restructuring the mining industry was directly related to the political and economic changes that began in 1989. The main goal was to move away from a centrally controlled economy to a free-market economy and to increase the efficiency and profitability of the mining sector. Mining enterprises were forced to reduce employment, reduce coal production and close the least profitable mines [18, 21].

Between 1990 and 2021, more than 50 coal mines were closed in Poland [37, 52]. At the same time, the number of people employed in mining decreased from about 400,000 to less than 70,000 [37, 52]. At the same time, only in Upper Silesia (one of the oldest and largest mining regions in Europe) decommissioned mines left about 7,600 hectares of post-mining landscapes [15]. The emergence of a large number of brownfields, especially in the first decade of the 21st

century, has led to a spatial crisis and the question of how to develop them.

In Poland, measures to adapt post-industrial areas, especially those related to mining, have been undertaken for more than 30 years. They concern both areas in urban centres and those in the periphery. Scarce financial resources and strong social tensions have forced local and regional authorities to constantly experiment. One of the most important areas to be developed was the Katowice mine site, located in the heart of the Upper Silesian capital. For the city's residents, local and regional authorities, it was an opportunity to revitalize the city after mining and to raise Katowice's profile as a provincial city.

Today the area is known as a Cultural Zone and hosts various types of regional and international events. This example shows how difficult it was to move from utopian concepts to their implementation under Polish planning, financial and political conditions. On the other hand, it shows how the lack of a unified concept/master plan and spontaneous actions can partially lose the site's potential, despite relative success.

2. RESEARCH AIMS AND METHODS

The purpose of this paper is to present the complete process of planning and transformation of post-industrial areas of Cole Mine “Katowice” – from the operation of the mine and its decommissioning, through planning and implementation to the contemporary use of post-mining land.

The study was based on:

- a query of archival, library materials and legal acts (obtained from the Archives of the State Mining Authority in Katowice, libraries and other state institutions – municipal offices, the Central Statistical Office, etc.);
- field research with photographic inventory, which took place from October 2020 to September 2022;
- analysis of plans and mine closure programs, project documentation including studies, projects, architectural and urban concepts, planning and strategic documents and legal acts
- cartographic research and quantitative research based on open-access geographic information systems and classification of post-mining land use by A. Wyrzykowska [52]

3. THE CONSTRUCTION, OPERATION AND DECOMMISSIONING OF THE MINE

The history of one of the oldest and longest-operating mining plants in Katowice dates back to 1823 when the retired rittmeister and salt trade agent Ignacy Ferdynand von Beym and his partners were awarded a mining grant by the State Mining Authority in Brzeg and began the construction of the ‘Ferdynand’ mine [16]. The application for a permit to establish the mine covered a mining field with an area of 600 measures (i.e. approx. 0.5 km²) located in the villages of Bogucice and Katowice [13].

Probably even before the official opening, black coal had been extracted in the area of the “Ferdynand” mine using the open-pit method. The geological structure of the seam allowed it to be mined manually with the use of simple tools just after a thin layer of soil was removed. As surface coal was depleted, underground mining commenced through explorato-

ry openings and minor shafts. Over time, the mine had been developing and expanding the mining field. Between 1834 and 1836, construction of the mine began, and the first shafts were commissioned: “Nottebohm” (later named “Moritz”), “Gruszka” (today known as “Gwarek”), with a depth of 100 m, “Benjamin” (now “Bartosz”) and “Mauve” (now “Warszawa I” and “Warszawa II”), with an original depth of 200 m. To make available new coal deposits (located deeper), more shafts were sunk, and the construction of new ones was being planned. In the late 1980s, the mine had approximately 60 minor and major shafts and exploratory openings [22, 28, 30].

On 1 July 1996, a decision was taken to merge two mines: the “Katowice” coal mine and the “Kleofas” coal mine into one enterprise – “Kleofas-Katowice” coal mine. The premise of their consolidation was not only to formally and organisationally merge the mining plants but also to integrate them technically and technologically. The project did not come through for financial reasons. On 1 July 1999, the last ton of coal

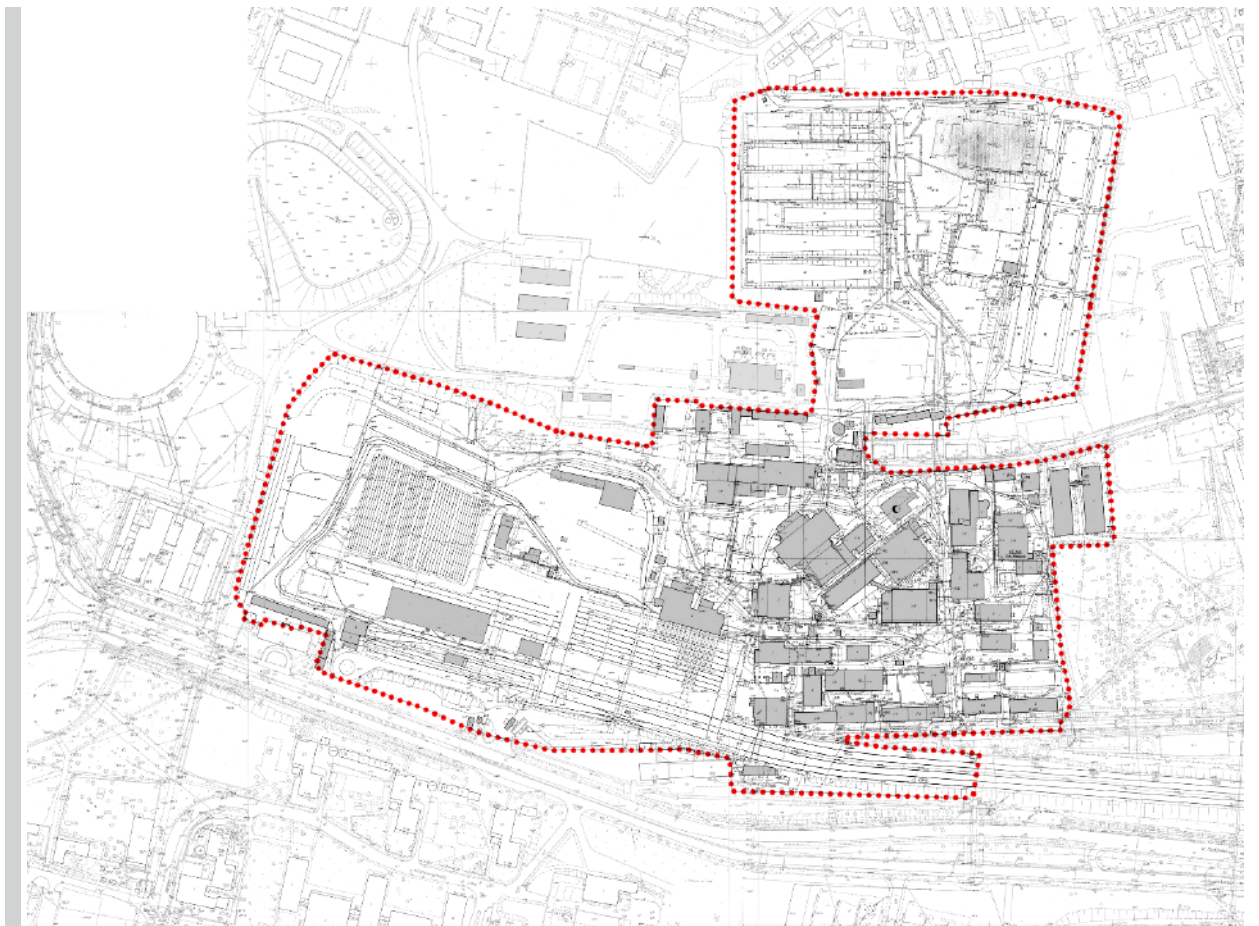


Figure 1.
A development plan for the ‘Katowice’ Coal Mine. Source: The Archives of the State Mining Authority in Katowice

left the “Katowice” mining plant, and it was put into liquidation. The reasons behind the decommissioning of the mine were considered to be the high costs of extraction of the seam beneath the very city centre of Katowice and changes in the coal market [12, 28, 30].

Development of the post-mine area

On the day of its decommissioning, the “Kleofas-Katowice” coal mine was owned by Katowicki Holding Węglowy S.A., and it covered a total area of 26.55 ha, including:

- the Main Plant together with railway trackage, with an area of approx. 212,000 m²;
- the “Bogucice” shaft, with an area of approx. 17,000 m²;
- the “Południowy” shaft, with an area of approx. 36,500 m² [12, 30].

The industrial premises of the Main Plant were located at 6 Kopalniana Street. They adjoined Roździeńskiego Avenue on the southern side and Olimpijska Street on the western side. The northern boundaries of the plant adjoined recreational areas and residential development. The mine’s premises included, among other things, the following: the shaft-top buildings with headframes and the winding engine houses of the “Warszawa”, “Gwarek” and “Bartosz II” shafts, storage yards, storage rooms, high-voltage switching stations, bathhouses, office and administration buildings, a forge, a carpentry shop, a processing plant with devices for dumping, segregating and transporting coal, a standard-gauge railway siding, repair workshops, as well as other building structures belonging to business entities separated from the mine, such as section VII of Zakład Energetyki Ciepłej Spółka z o.o. Due to the historical arrangement of the buildings and their spontaneous development, it is impossible to clearly distinguish a characteristic compact layout of mine buildings [12, 30].

The “Bogucice” shaft was located east of the Main Plant, also in the Bogucice district. Its industrial premises were directly adjacent to residential areas and Roździeńskiego Avenue (on the southern side). In addition to the shaft, the industrial premises included the shaft-top building with the winding engine, backfilling facilities, a 6kV switching station, a workshop and a fan house [12, 30].

The industrial premises of the “Południowy” shaft, with an area of 3.65 ha, were located south of the Main Plant in the Muchowiec district. Besides the ventilation shaft, the plant included a shaft-top building with the winding engine, a 6 kV switching station,

storage and workshop buildings and rooms and a fan house [12, 30].

Decommissioning and reclamation

According to the “Programme for the Decommissioning of the Ruch II “Katowice” Mining Plant of the “Katowice-Kleofas” coal mine in 1999-2000”, the second stage of the process was to encompass the decommissioning of underground workings, the decommissioning of the “Gwarek”, “Bogucice” and “Południowy” shafts and minor shaft no. 27, as well as the decommissioning of above-ground structures [30]. The exceptions were the structures which were capable of directly continuing their original function to support the neighbouring mines as well as the structures of high historical value, covered by conservation protection, including the following: the winding engine house of the “Bartosz” shaft, the shaft-top building of the “Bartosz” shaft, the headframe of the “Bartosz” shaft, the winding engine house of the “Warszawa II” shaft, the shaft building of the “Warszawa II” shaft, the headframe of the “Warszawa II” shaft, the winding engine house of the “Warszawa I” shaft, the shaft building of the “Warszawa I” shaft, the headframe of the “Warszawa I” shaft, station no. 9, the carpentry shop building, the leatherworker’s house, the storage building, the “Gwarek” bathhouse, the main bathhouse, the forge building, the mechanical workshops building, the electrical workshop building and the water tower [30, 31].

Reclamation of the area of the former Ruch II “Katowice” plant of the “Katowice-Kleofas” coal mine was to be carried out after the disassembly and demolition work was completed and the area was cleared of waste. The general scope of the reclamation process, for which mining restructuring companies were responsible, included adjusting the topography in alignment with the surrounding areas, regulating hydrogeological conditions and the restoration of soil [28, 30]. After the completion of the process, the city was to receive new investment areas, for which certain functions were envisaged in the applicable spatial development study, i.e.:

- for the Main Plant:
 - a) production, office and service facilities (the centre of the area with high-density office and production development);
 - b) an area for equity joint ventures with foreign investors (modelled on the area of the “Gottwald” mine)

- for the “Bogucice” shaft – high-intensity residential development areas;
- or the “Południowy” shaft – areas for road transport facilities [28, 30].

About 3.8 ha of the site of the Main Plant was to be used for the purposes of the Central Mine Dewatering Plant [28, 30].

4. THE PLANNING AND IMPLEMENTATION OF THE TRANSFORMATION PROCESS

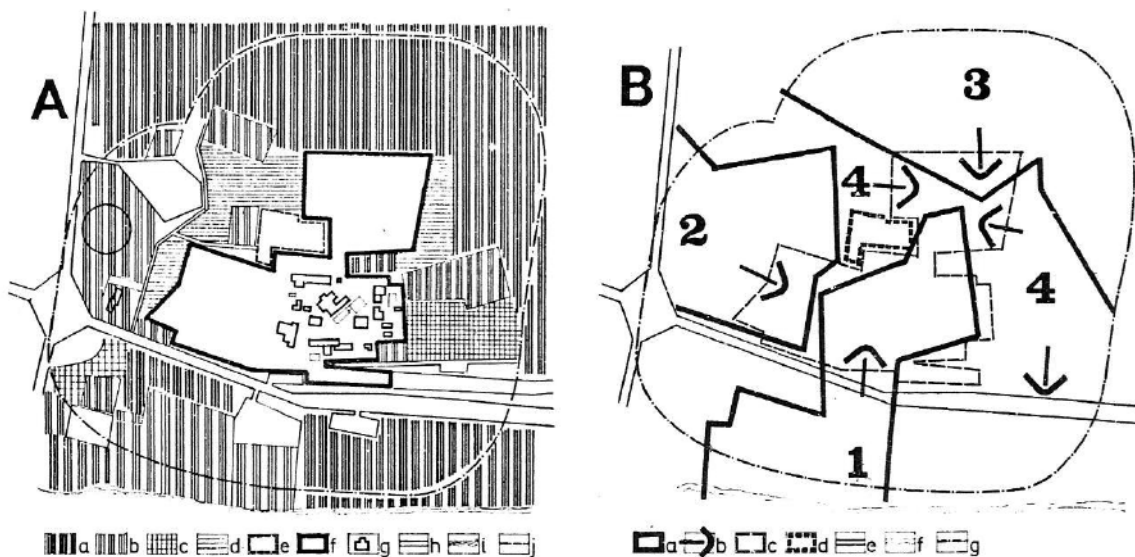
4.1. Transformation concepts

The future of the mine after the end of its exploitation was being considered even when the mine was still in operation. In late 1980s, in the “Historical and Architectural-Technical Study of the Above-Ground Structures of the “Katowice” Coal Mine”, a team from the Faculty of Architecture of the Wrocław University of Technology led by Prof. S. Sołowij assessed the buildings of the mine and highlighted the possibility of using the architecturally valuable structures for museum purposes [38]. The validity of this concept was also confirmed by E. Szady, who emphasised the unique technical equipment of the plant as well as the form and layout of its building structures.

E. Szada took into account an equally probable scenario, which was taken into consideration assimilation of the site of the mine with the neighboring plots and its use for the existing functions (Fig. 2). The unique location of the “Katowice” coal mine in the very centre of the city, right next to the “Spodek” sports and entertainment arena and the University of Silesia, naturally implied the development of the mining plant’s area to support these facilities [38].

In 2001, the problem of the development of the area of the decommissioned “Katowice” coal mine was raised by Maciej Pucher and Maciej Strączek, students of the Faculty of Architecture of the Silesian University of Technology. As part of their joint diploma thesis, prepared under the supervision of dr hab. inż. arch. Krzysztof Gasidło and dr. inż. arch. Jerzy Cibis, they prepared a design to adapt the historic post-industrial structures for the Academy of Fine and Applied Arts and to locate a new building of the Silesian Museum on its premises [11].

The premise on which the thesis was based was to use the potential of the preserved cultural heritage to the maximum so that the former mine would not be just a cold ethnographic museum but an area teeming with life. The authors of the design proposed a new pedestrian route along the viewing axis between the complex of the “Katowice” coal mine’s historic buildings (adapted for the Academy of Fine and Applied



A – existing condition (a) housing, (b) services, (c) greenery, (d) wasteland, (e) industry, (f) mine fencing, (g) structures of cultural value, (h) roads, (i) the Rawa River, (j) zone boundaries, B – design, (1) the University of Silesia, (2) the sports and entertainment arena, (3) residential development, (4) greenery, (c) mine fencing, (d) industry, (e) roads, (f) the Rawa River, (g) zone boundaries

Figure 2.

A proposal to transform the use of the “Katowice” mine. Source: [38]

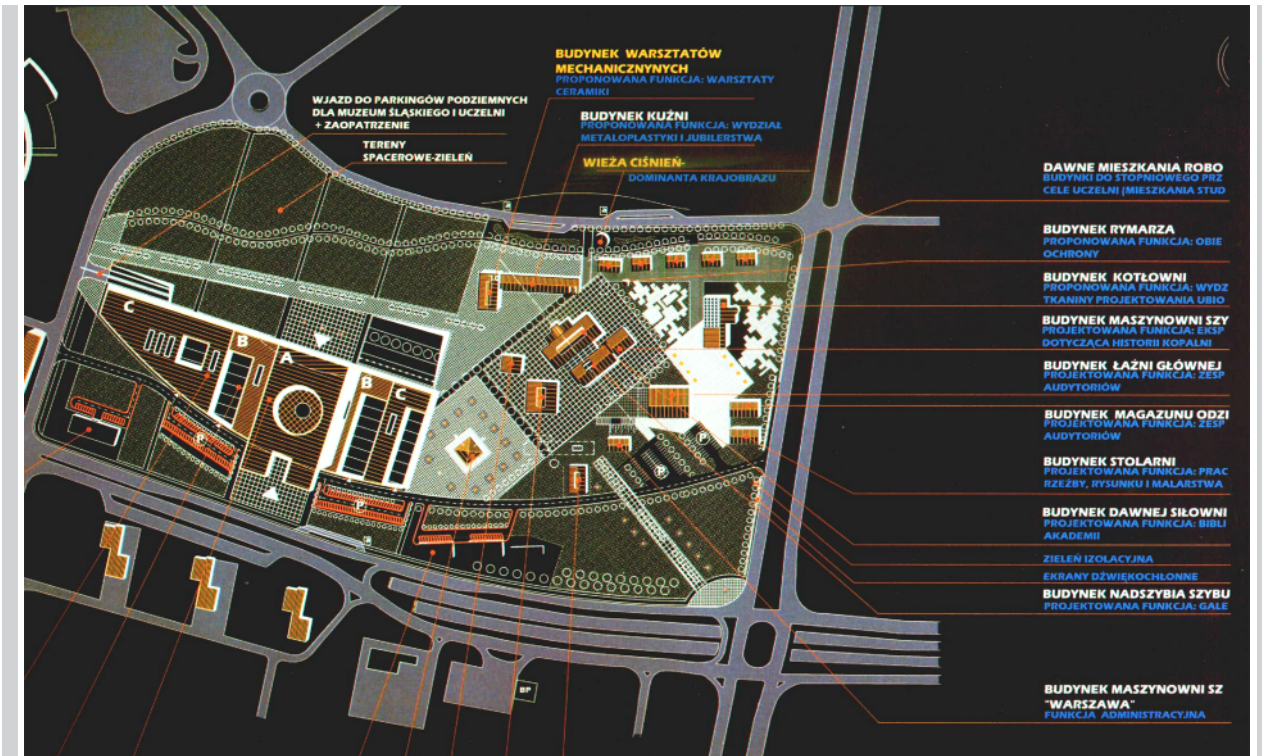


Figure 3.

An area development plan. Source: Maciej Pucher and Maciej Strączek's master's thesis prepared under the supervision of prof. dr hab. inż. arch. K. Gasidło and dr. inż. arch. J. Cibis, entitled "Adaptation of the Historic Structures of the Decommissioned "Katowice" Coal Mine for the Academy of Fine and Applied Arts"

Arts) and the "Spodek" sports and entertainment arena. On its northern side, a complex of the Silesian Museum's buildings was placed along with accompanying green areas. In the central part of the newly designed complex, there was the main museum building, which housed the entrance area, main museum rooms, storage rooms and administration rooms. On the southern side, the complex of the museum buildings was adjacent to the traffic route providing access to the Museum itself and to the Academy of Fine and Applied Arts [11]. The results of the thesis were presented to the public and met with the approval of the invited guests. However, the implementation of the design seemed unrealistic at that time. The thesis was to remain one of numerous student studies of educational rather than practical importance [11].

Furthermore, in the same year, the Katowice City Hall issued a public call for tenders for the preparation of a draft local spatial development plan for the area between W. Korfańtego Avenue, Katowicka Street, Markiefki Street and Roździeńskiego Avenue [41, 46]. The scope of the study was supposed to encompass an urban planning concept for an area of 90 ha, taking into account, among other things:

- transformation of the post-industrial site of the "Katowice" coal mine into an area with centre-forming functions;
- transformation of the area at the back of the "Spodek" sports and entertainment arena for service purposes;
- adaptation and extension of the existing park of the "Katowice" coal mine;
- transformation and expansion of the centre of the Bogucice district, located in the area of Katowicka Street, Wajdy Square and Markiefki Street, in alignment with the Sanctuary of Our Lady of Bogucice;
- transformation and organisation of the transport network;
- revitalisation of the existing buildings covered by conservation protection located in the area of Markiefki Street;
- preservation of the historic complex of the "Katowice" coal mine's buildings;
- protection of the existing green areas as well as recreational and leisure areas and their mutual links [46].

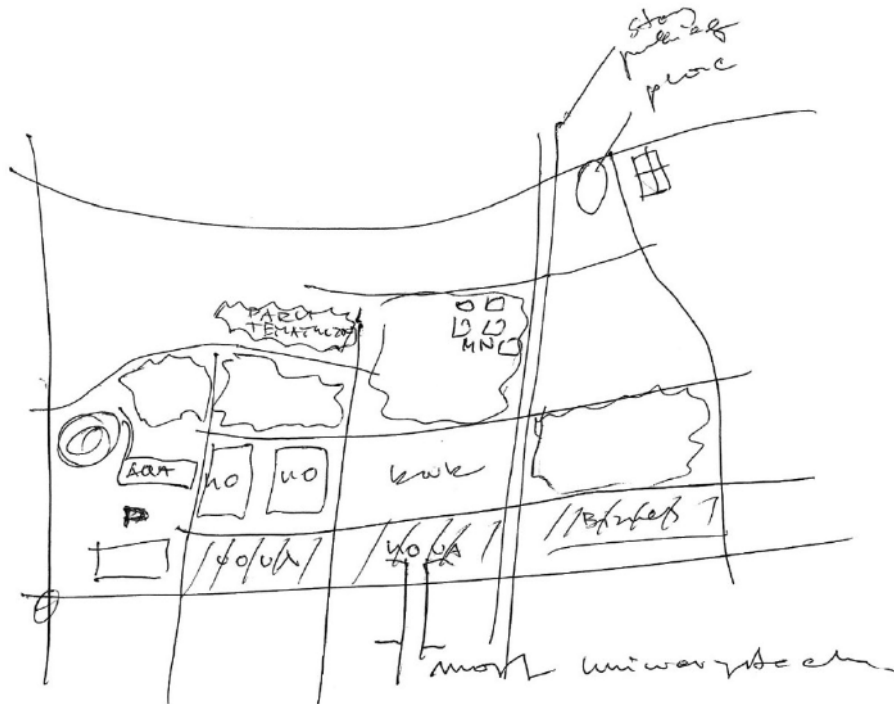


Figure 4.

A sketch of urban planning concepts for the area located between Korfantego Avenue, Katowicka Street, Markiefki Street and Różdzieńskiego Avenue, prepared by the anonymous authors of work No. 008. Author: Krzysztof Gasidło. Source: Krzysztof Gasidło's private notes

Eight urban planning studies (“Area Development Study”), including a graphic part and a descriptive part, were submitted for evaluation. The concepts put forward were chiefly focused on presenting the target picture of the development. Less attention was paid to the possibilities of the gradual stage-by-stage development of the area and to residential functions. Most of the studies contained similar observations and proposals regarding the spatial planning policy pursued [10]. They referred to:

- changes in the premises of the local spatial development plan (adjustment of the eastern boundary of the local spatial development plan and adjustment of the course of Nowograniczna Street);
- proposals for detailed solutions (extension of the tram line from the roundabout, along Różdzieńskiego Avenue, up to the Szopienice district; development of the recreational and sports areas by building a swimming pools complex; creation of a strong northern frontage of Różdzieńskiego Avenue; changing the course of Katowicka Street; and strengthening the local character of Bogucice by creating a plaza (market square) next to the Basilica of Our Lady of Bogucice);

– implementation of the local spatial development plan in question through:

- the establishment of an agency in charge of the spatial development of the area;
- precise determination of the rules of temporary use for particular sections of the area;
- systematic takeover of land by the city;
- organisation of urban planning and architectural competitions for the development of individual sections of the area;
- preparation of a mock-up of the entire area and using it to track the changes taking place;
- launch of urban marketing activities, including the preparation of programmes for which EU funding could be obtained [10].

According to the experts evaluating the submitted designs (Stanisław Niemczyk and Krzysztof Gasidło), the best concept was put forward by the anonymous authors of work No. 008. The vision presented by the architects was based on the proposal for natural and organic development of the city. As part of the spatial programme, a band-shaped functional was proposed. It consisted of:

- the peripheral band – the urban front of Katowice

(science and higher education facilities, transport connections above Rożdżeńskiego Avenue and office buildings);

- the southern band – centre-forming functions (science and higher education facilities, cultural and art facilities and expansion of recreational and sports services);
- the middle band – ecological routes;
- the northern and eastern peripheral band – residential development with accompanying services.

The structure of the spatial layout was based on “classic” urban blocks, which enabled the accommodation of both the inner-centre character of the development with the urban greenery [10].

4.2. Designs and their implementation

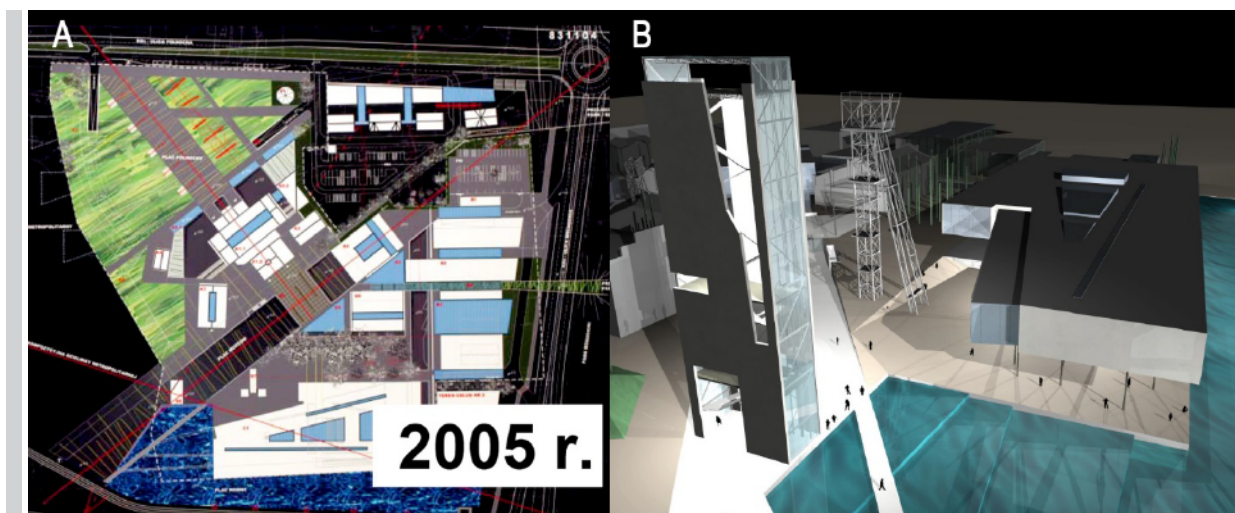
The Silesian Museum

In 2003, the Province Marshal’s Office began to seriously consider the possibility of moving the Silesian Museum to the area of the closed “Katowice” mine [24]. Negotiations regarding the takeover of the site of the decommissioned “Katowice” coal mine located at Rożdżeńskiego Avenue, with an area of 6.1 ha, took several months. Finally, Katowicki Holding Węglowy S.A. agreed to exchange the site for a plot at Ceglana Street and additional compensation in the amount of PLN 750,000 (which was to be paid by the city of Katowice). A notarial deed was drawn up on 30 December 2004. In the subsequent year, the plots were

formally handed over, and the foundation stone for the Silesian Museum project was symbolically laid [24].

In parallel with the process of arrangements regarding the takeover of the site of the former “Katowice” coal mine, the Silesian Province Marshal’s Office held a public discussion and workshops aimed at developing common programme and spatial planning guidelines for the new museum building. In following up on the above activities, an architectural competition for a study of the functional and spatial concept for the Silesian Museum was opened in July 2005 [35]. There were three competition submissions, two of which were disqualified on formal and legal grounds. Finally, the prize was awarded to the design prepared by the architects team of P.A. NOVA sp. z o.o. from Gliwice. The study presented by them provided many interesting solutions and became the starting point for further work on the preparation of design guidelines (Fig. 5).

An international competition for the concept for the new building of the Silesian Museum and the development of the southern part of the site of the decommissioned “Katowice” mine was announced on 30 October 2006. The competition concerned an area of 2.7 ha, which was to be adapted for the purposes of “presenting the history of Silesia, its industry, Uprisings as well as ethnography and ethnology”. At the same time, however, the area was intended to remain a public space of an urban character [35]. The main organisers of the event were the Silesian Province Marshal’s Office and the Katowice City



A - development plan, B - visualization of the New Silesian Museum in Katowice

Figure 5.

A functional and spatial concept design of the New Silesian Museum in Katowice, Source: https://slaskie.pl/content/1789_2006-11-02 (accessed 04/02/2020), https://www.pa-nova.com.pl/pl/Panova/Nagrody_i_wyroznienia (accessed 04/02/2020)

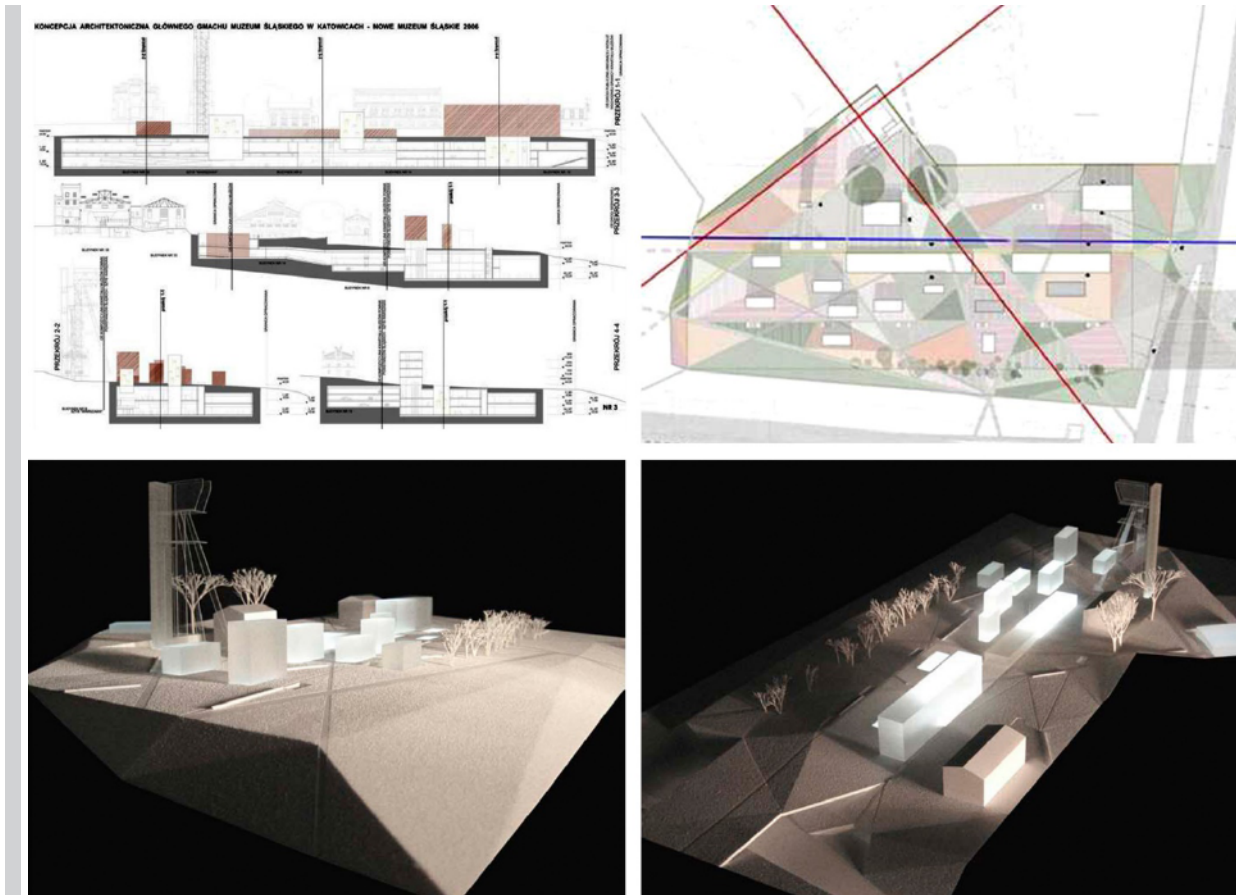


Figure 6.

An architectural concept for the main building of the Silesian Museum – 1st prize. Designer: Riegler Riewe Architekten ZT-GesmbH. Source: http://www.a-ronet.pl/index.php?mod=nagroda&n_id=24 (accessed 07/02/2020)

Hall in cooperation with the Katowice Branch of the Association of Polish Architects (SARP). The main prize in the competition was PLN 100,000 and participation in the work on design documentation [35].

The competition was entered by eighteen design teams, who presented their own original architectural and urban planning solutions for the new building of the Silesian Museum. The best study in the opinion of the jury was presented by Riegler Riewe Architekten studio from Graz (Austria), and it was awarded the main prize. The designers proposed a bold solution, the main premise of which was to hide underground a significant part of the building's cubature (the entrance area with the main lobby and the exhibition area). In this way, they referred to the original function of the area and the existing cultural heritage. The outer part of the museum consisted of cuboid, transparent towers (the administrative building and the structures providing additional light to the underground part of the building) and the remaining historic structures of the decommissioned

mining plant (adapted for the purposes of the new function). Minimal interference with the spatial arrangement of the existing urban layout allowed the architects to freely create a public space based on a triangular grid [24].

Negotiations with the Austrian architects regarding the preparation of design documentation took eight months. A building permit was obtained in September 2009, and design works as well as tender documentation were completed in the spring of the subsequent year. At the end of 2010, a consortium of Polish-Spanish companies, Budimex S.A. from Warsaw and Ferrovial Agroman S.A. from Madrid, was chosen as the general contractor [24].

Construction was officially initiated on 5 July 2011 at a symbolic ceremony. Intensive construction work lasted 2 years. In June 2013, a series of construction handovers began, and in October the occupancy permit was obtained. The new premises of the Silesian Museum were made available to visitors on 26 June

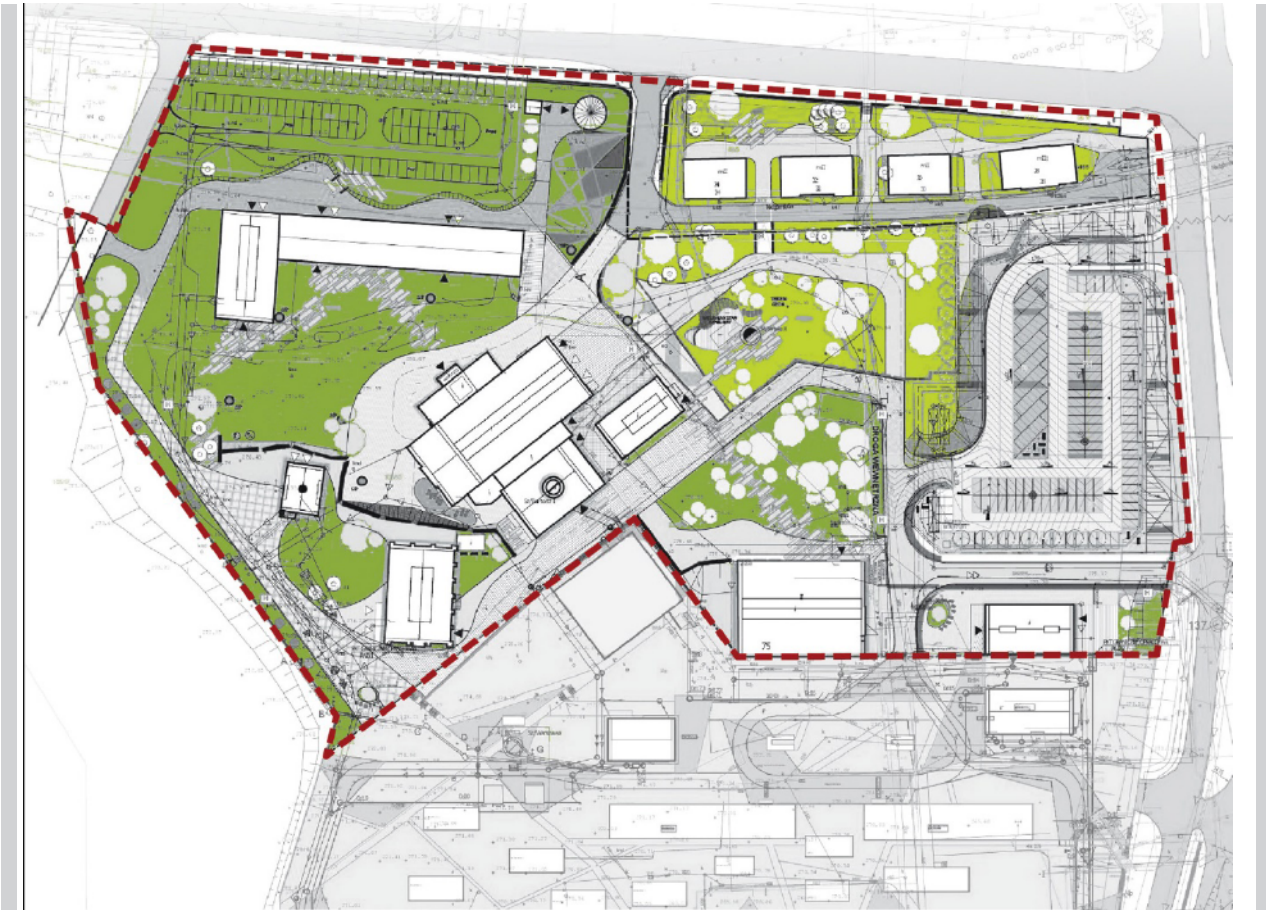


Figure 7.

A functional and spatial concept for the development of the northern part of the site of the former “Katowice” coal mine and the adaptation of the existing structures for cultural purposes – an area development design, variant 3. Designer: NOVAsudio and VERTIGO Architekci. Source: <http://archinea.pl/kwartal-muzeow-w-katowicach-novastudio-vertigo-architekci/> (accessed 07/02/2020)

2015 during the three-day Opening Festival. Almost three years later (in May 2018), the Museum finally bid farewell to its former premises at 3 Korfantego Avenue [5].

Further deliberations on the development of the post-mining areas for museum purposes resulted in a public call for tenders issued by the Silesian Museum in August 2012. It concerned the preparation of a multi-variant functional and spatial concept for the development of the northern part of the area belonging to the Silesian Museum. The starting point for the design was the need to make effective use of the existing infrastructure in order to enhance the museum’s offering. The design was supposed to encompass, among others, alternative culture promotion centres (galleries, creative workshops, etc.), the possibility of using the space for temporary and permanent exhibitions, as well office rooms and workshops for the Industrial History, Silesian Uprisings and Monument Conservation departments. The concept was also sup-

posed to take into consideration the adaptation of the remaining structures for functions that could, for instance, be useful for professional and social activation of people from excluded backgrounds and people returning to the labour market [5].

The contract was awarded to a consortium of the NOVAsudio & VERTIGO Architekci companies. The team was composed of Kamila Cieśla-Gałeczka, Paweł Gałeczka, Daniel Gola, Piotr Musiał, Monika Nowak and Wojciech Skrzypiec. In cooperation with the ordering party, the designers put forward three concepts, one of which was selected for detailed preparation along with division into phases [2].

The main premise of the chosen concept was to create an urban garden on the “green hill of the mine”. In this way, the architects wanted to refer to the “city of gardens” image created by Katowice. Amorphous shapes and the use of natural materials were to contrast with the geometric and orderly layout of the

southern part of the Silesian Museum. The historic complex of the “Bartosz” shaft buildings was the central point of the northern compositional layout. Moreover, the study envisaged an underground passage between the shaft-top building and the main lobby on the new premises of the Museum, which would functionally connect the entire complex and symbolically refer to the underground structure of a mine [2].

The second stage of the project covered only the restoration and adaptation of the historic buildings of the main bathhouse and the carpentry shop and the construction of a ground-level car park for cars and coaches with a total area of approx. 1.3 ha. The transformations were successfully implemented under the Financial Mechanism of the European Economic Area and the Norwegian Financial Mechanism for 2009-2014. The works were officially completed and the facility opened to visitors on September 8, 2017.

In the third (last) stage, which is currently underway, it is expected to complete the reclamation of the post-industrial area and 7 adapted structures are to be made available [5].

The International Congress Centre (MCK) and the premises of the Polish National Radio Symphony Orchestra (NOSPR).

After the success of the competition for the concept for the new Silesian Museum building in 2008, two other international competitions were announced for the development of urban and architectural concepts for the new premises of the Polish National Radio Symphony Orchestra (NOSPR) and the International Congress Centre (MCK). The newly designed space (today known as the “Culture Zone”) was intended to enable the organisation of cultural events, fairs and conferences and to bring new life to the post-mining area. The planned projects also contributed to the creation of a new image of Katowice, far from its industrial roots [3].

The competition for an urban and architectural concept of MCK won the JEMS Architekci and Konior Studio presented the best concept for NOSPR. The construction work of MCK began in November 2011 – one year later of NOSPR. The cost of the entire project was approx. PLN 682 million and was half-funded by the European Regional Development Fund [3, 49].

The “First District” housing estate

Along with the gradual sale of the mine’s assets, the northern part of its site was acquired by a private investor, the TDJ Estate company. Its goal was to use the post-industrial area for high-intensity residential development. Medusa Group, a Bytom-based architectural studio, was invited to join the project, and it became responsible for preparing the entire project documentation – from the concept to the detailed design [27].

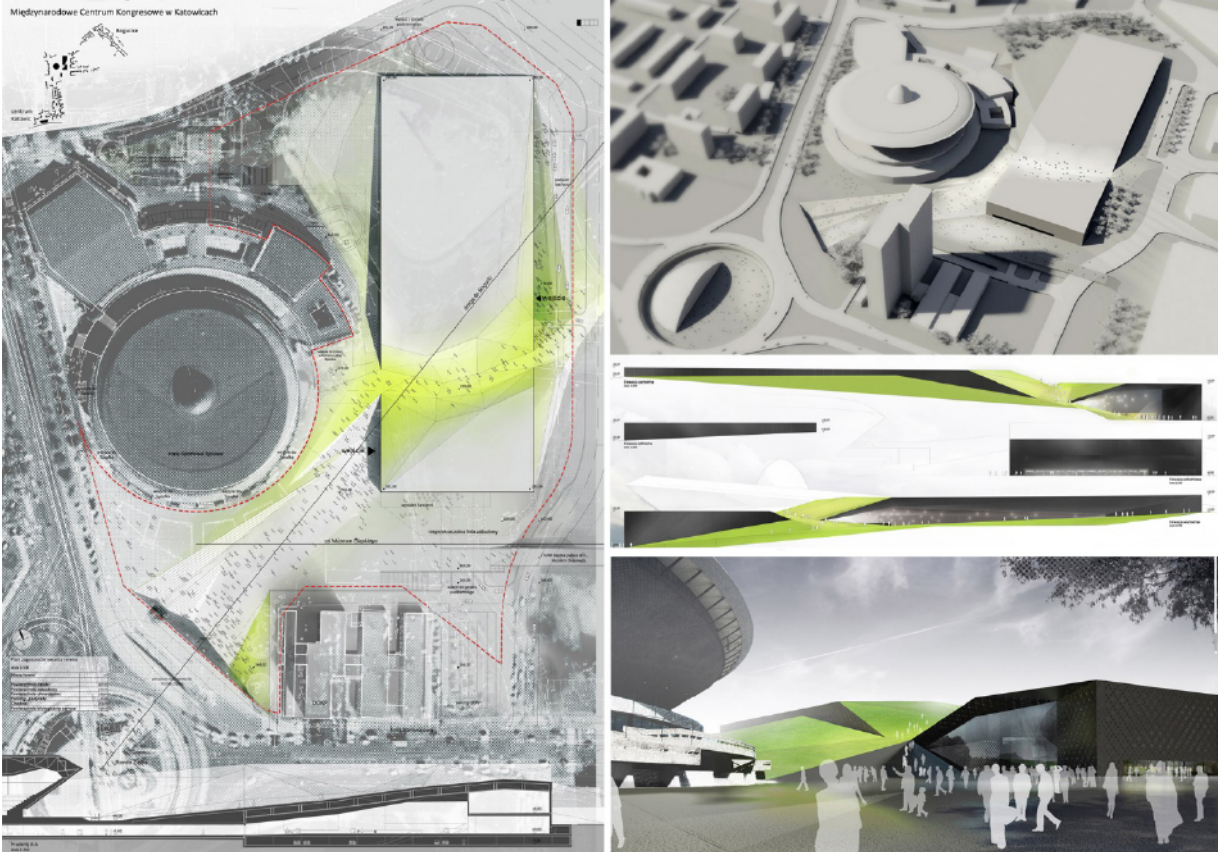
The design proposed by the architects involved the construction of a housing estate consisting of eight multi-storey point buildings with accompanying infrastructure (internal roads, car parks and service premises). The recreational space between the buildings was to be filled with plant various species and landscaping elements. The whole project was divided into six stages [27].

The “First District” housing estate concept met with strong opposition from residents, architects and the management of the Silesian Museum. It was feared that the newly designed residential development would disturb the perception of the values of the museum’s cultural heritage and the viewing axis facing the former mine. For the purposes of the discussion, a Study of Landscape Protection of the Silesian Museum in Katowice was prepared under the supervision of dr inż. arch. Klara Czyńska from the West Pomeranian University of Technology in Szczecin [5]. This discussion also raised the need to adopt a local spatial development plan. This plan would make it possible to resolve the contentious issues and preserve the cultural heritage of the “cultural zone” [19].

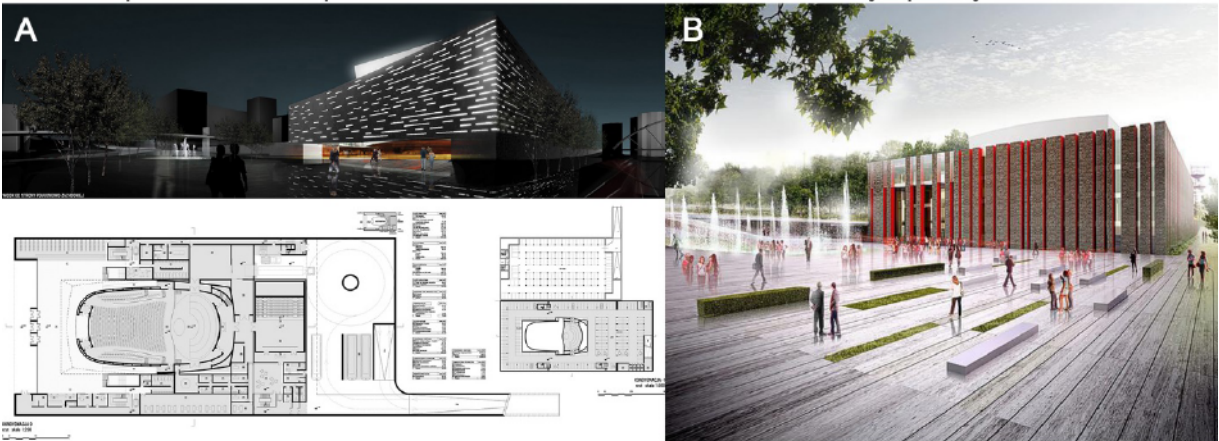
At the turn of 2016 and 2017, TDJ Estate received an administrative decision on land development conditions for the first stage of its project, and it was granted a building permit in 2018 [27]. The first construction works began in spring 2019 [27]. Przedsiębiorstwo Budownictwa Przemysłowego “Chemobudowa – Kraków” Spółka Akcyjna (short name: “Chemobudowa – Kraków S.A.”) became the general contractor of the project.

The first stage, consisting of three twelve-storey residential buildings, joined by a commercial ground floor, was completed in 2021. Construction work related to two seventeen-storey point buildings with a height of approx. 55 m. (the second stage) is currently underway [19].

A concept for the International Congress Centre



A concept for the new premises of the Polish National Radio Symphony Orchestra



A – the competition project; B – visualization of the NOSPR before construction

Figure 8.
 A concept for the new premises of the Polish National Radio Symphony Orchestra (NOSPR) and the International Congress Centre (MCK). Source: http://www.a-ronet.pl/wyniki_konkursow.html (accessed on 10.04.2019), <https://www.muratorplus.pl/biznes/wiesci-z-rynku/nowa-sala-koncertowa-nospr-w-katowicach-generalny-wykonawca-wybrany-aa-LuLW-MeV5-cCfB.html>



Figure 9.

A concept for the “First District” housing estate in Katowice. Author: Medusa Group. Source: <https://pierwszadzielnica.pl> (accessed on 20.01.2022)

A multi-storey car park

The most recent deliberations on the further development of the area of the former “Katowice” mine resulted in an architectural and urban planning competition for the vision of a multi-storey car park in the “Culture Zone” (announced in March 2020). The event aroused great interest both among architects and urban planners, as well as among the local community, thus opening a discussion on the reasonableness of the actions taken by the City Hall. The main organiser of the competition was the Katowice Branch of the Association of Polish Architects (SARP), acting at the request of Katowickie Towarzystwo Budownictwa Społecznego Sp. z o.o. [20].

The aim of the competition was to select an urban planning and architectural concept for a multi-storey car park that would be the best in terms of its functionality, usability and layout. The area (approx. 1.61 ha) to be covered by the study included the existing ground-level car park between Góreckiego Street, Haralda Street, Olimpijska Street and Wojciecha Kilara Square. Among other specifications, the facility was to be designed:

- as an open above-ground structure;
- to ensure natural ventilation, without the possibility of installing air conditioning and ventilation devices on the façades;
- with a capacity of approximately 1,300-1,500 parking spaces [20].

Seventy designs were submitted to the competition, of which only five made it to the final. The first prize was awarded to the design team consisting of Jerzy Gurawski, Bartosz Gurawski and Błażej Szurkowski. The vision of the multi-storey car park presented by the architects was harmoniously fitted into the existing context of the “Culture Zone”. The form of the building, with a “flowery meadow” on the roof, directly corresponds to the “green valley” of the International Congress Centre (designed by JEMS Architekci) and emphasises the axis between the “Spodek” sports and entertainment arena and the Silesian Museum [6].

In the spring of 2021, Katowickie Towarzystwo Budownictwa Społecznego Sp. z o.o. signed a contract with the winners for the design of the car park.



Figure 10.
An urban and architectural concept for a multi-storey car park in the “Culture Zone”. Authors: Jerzy Gurawski, Bartosz Gurawski and Błażej Szurkowski. Source: bryla.pl (accessed 23/10/2022)

According to the preliminary schedule, the construction project should start in the first half of 2023 [17].

4.3. Spatial planning

An important element affecting the directions of development of post-mining areas is the spatial planning policy adopted by a particular city (commune). In Poland, determination of the purpose and method of land development is within the spatial planning powers of a commune (pursuant to the Act on Commune Self-Government of 1990 and the Act on Spatial Planning and Development of 2003) [45]. The commune council defines its spatial planning policy through local bylaws, namely the Study of Conditions and Directions of Spatial Development and the Local Spatial Development Plan (LSDP) or the Local Revitalisation Plan (MPR). In the absence of a Local Spatial Development Plan or a Local Revitalisation Plan, the Mayor issues, upon the application of a project owner, an individual administrative decision on land development conditions or on the location of a public-purpose project [45].

According to Uchwała No. XLV/420/97 of the Katowice City Council of August 25, 1997 on the

“Study of Conditions and Directions for the Spatial Development of the City of Katowice”, the post-mining area of Coal mine “Katowice” were originally designed to be used for production, service, housing functions and automobile transportation facilities [39]. In 2012, the Katowice City Council adopted a new “Study of Conditions and Directions for the Spatial Development of the City of Katowice – Edition II” and changed the previous policy of delinquency for the post-mining areas. The proposed direction of transformation of these areas were service areas with associated greenery and high-intensity service and residential areas [40].

The first attempt to adopt an LSDP for the area of district Koszutka-Bogucice was made by Katowice City Council in 2001 [41]. As part of the search for the right direction of development, a public tender (mentioned above) was announced for the preparation of a draft local land use plan for the area between Korfantego Avenue, Katowicka Street, Markiefki Street and Roździeńskiego Avenue [46].

Together with the decision on the relocation of the Silesian Museum and the acquisition of new investment land by the city, another decision was made on the preparation of an LSDP [42]. At the time of

preparation of the documents, all planned investments in the Cultural Zone had already been completed, and the project had to be updated with new conditions. In 2015, the LSDP was reintroduced, excluding the area between Góreckiego Street and Rodzińskiego Avenue from the study area [43].

The first draft of the plan was presented in 2019. It allowed a high proportion of residential and commercial development up to 18 stories (maximum height of 55 meters) and urban dominants up to a maximum height of 140 meters. The proposal was highly controversial among both residents and experts [34]. Three other projects were put up for public discussion. On May 28, 2020, the Katowice City Council finally adopted the LSDP for the area between Katowicka Street and Henryk Mikołaj Górecki Street in Katowice [44].

5. PRESENT LAND USE

As of October 2021, about 56.5% of the former Katowice mine sites had been reused. They are located on the site of the Main Plant on Rodzińskiego Street. The leading function is the service areas (education and culture), which occupy about 38.9% of the total area. The transport service areas traffic service areas cover 17.5% of the site. About 0,4 hectares of the post-industrial areas continue to be used in their original function to provide adequate safety conditions (as deep-water pumping station) for neighbouring operating mines. Nowadays, the peripheral shaft areas are still waiting for their development, and only

11.1% of them are prepared for the next investment or construction works on them are in progress.

Today, the post-mining areas of the Katowice Coal Mine are known as the “Zone of Culture”. The complex includes the Silesian Museum, NOSP, MCK and the sports and entertainment hall “Spodek” (on the site of the former “Fanny” steelworks). Cultural, sports, economic and scientific events are organized here at local, national and international levels, such as the European Economic Congress, the 24th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change – COP24 (2018) and the 11th World Urban Forum (2021). And during the last-mentioned event, the landscape of the capital of the Silesian region was criticized. In a post on social media, Danish urban planner Mikael Colville-Andersen described Katowice’s city centre as “one of the most dystopian urban landscapes in Europe”. [47].

“What you did in Katowice, the Americans did to themselves in the 1970s and found out that it doesn’t work. In Detroit, for example, they threw four huge sports venues into the downtown area, which always creates a massive barrier to overcome in the middle of the city in the first place. So you already have this Spodek. But then you add more facilities to it, which create more barriers. It’s crazy” – Mikaela Colville-Andersen said in an interview with Onet.pl. “Why are there almost no trees here, why is there so little grass, except for the fine roof of this convention centre? We should already know that pedestrians are not sent underground like rats. Something like this in 2022 in

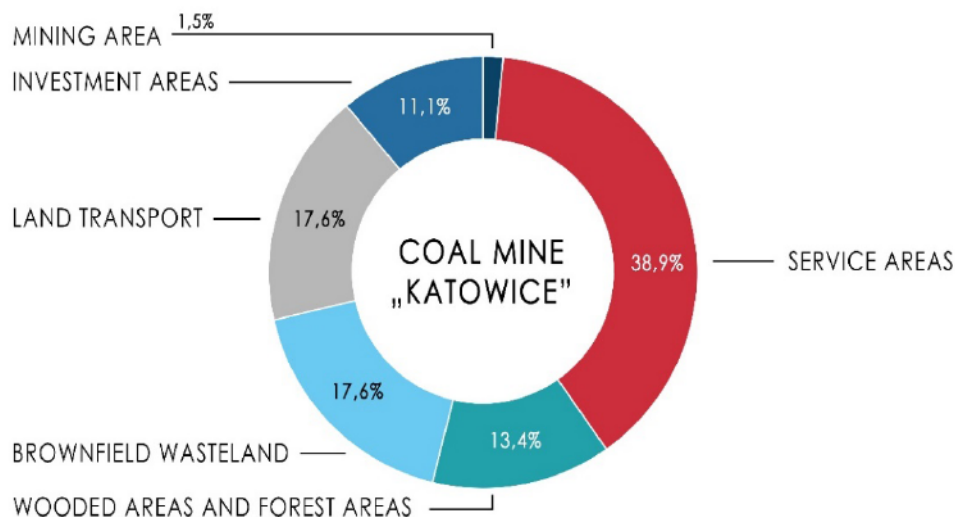


Figure 11. Land use of Coal Mine “Katowice”. Source: author’s study



A - Silesian Museum, B – Parking space in Culture Zone

Figure 12.
Land use of Coal Mine ‘Katowice’. Source: author’s study

the heart of a European city!” [47]. The comment has generated considerable controversy, particularly among local government officials trying to defend their previous efforts, but it is nothing new. It underscores earlier criticisms of the city’s investment moves. The buildings in the Cultural Zone are recognized as outstanding architectural works and continue to receive new awards. However, according to residents and planners, it was a mistake to build such a large number of new public buildings that are important to the city, as opposed to spreading them throughout the city, which would have allowed all parts of the city to develop evenly [54].

Cultural zone development was created without a masterplan. Land use projects were created only for the immediate surroundings of individual buildings, without considering their further continuation. “Loud questions about the space between them were dismissed from the beginning with the traditional “We’ll sew it together somehow”. Eventually the area was sewn together, but unfortunately with thick threads, different materials and large patches of parking. Unfortunately, nobody thought about the

appropriate placement of additional functions in this area to try to generate daily traffic and urban life here” says architect Bartłomiej Nawrocki (from the Katowice office of *jojko+nawrocki architekci*) [54]. “There is still a clear lack of functions in the Culture Zone that would encourage residents to come here not only on holidays, concerts or mass events” – noted urban planner Machal Stangel [54].

In 2015, the association “My city” nominated the Cultural Zone for the anti-award “Concrete Cube”. Members of the association argued that the space was designed in a way that contradicts modern international planning standards, as its impact favours traffic instead of helping the city reduce it. In addition, the entire area is not connected to the surrounding urban fabric [14]. Culture Zone has also missed its main goal – revitalization of the Bogucice district. It was precisely the residents of the neighbourhood and the old miners’ houses in Katowicka Street who were supposed to have the best access to this zone, which was also to become a large and beautiful green heart of the district [33].

Today it is important not to avoid criticism, but to learn from it and set new directions for development. The Cultural Zone can continue to be the cultural centre of the city, but also more friendly to its residents. Critical voices from experts, but also comments from users themselves will help get the appropriate value of public space.

6. CONCLUSIONS

The decision to stop excavating coal at the Coal Mine “Katowice” and to decommission it initiated a process aimed at providing residents and local and

regional authorities with social, economic and spatial benefits from the new development of the area. This process has been going on for over 20 years and is not yet complete.

Initially, transforming the decommissioned Katowice mine was developed for the entire mine site (about 26.55 hectares). Its assumptions were very general and were mainly based on the legal and planning conditions of the time and the need to ensure the safety of the neighbouring mining sites. In parallel with the activities carried out by Katowicki Holding Węglowy S.A., noted the necessity to develop more detailed studies for the mine area (about 21.20 hectares)

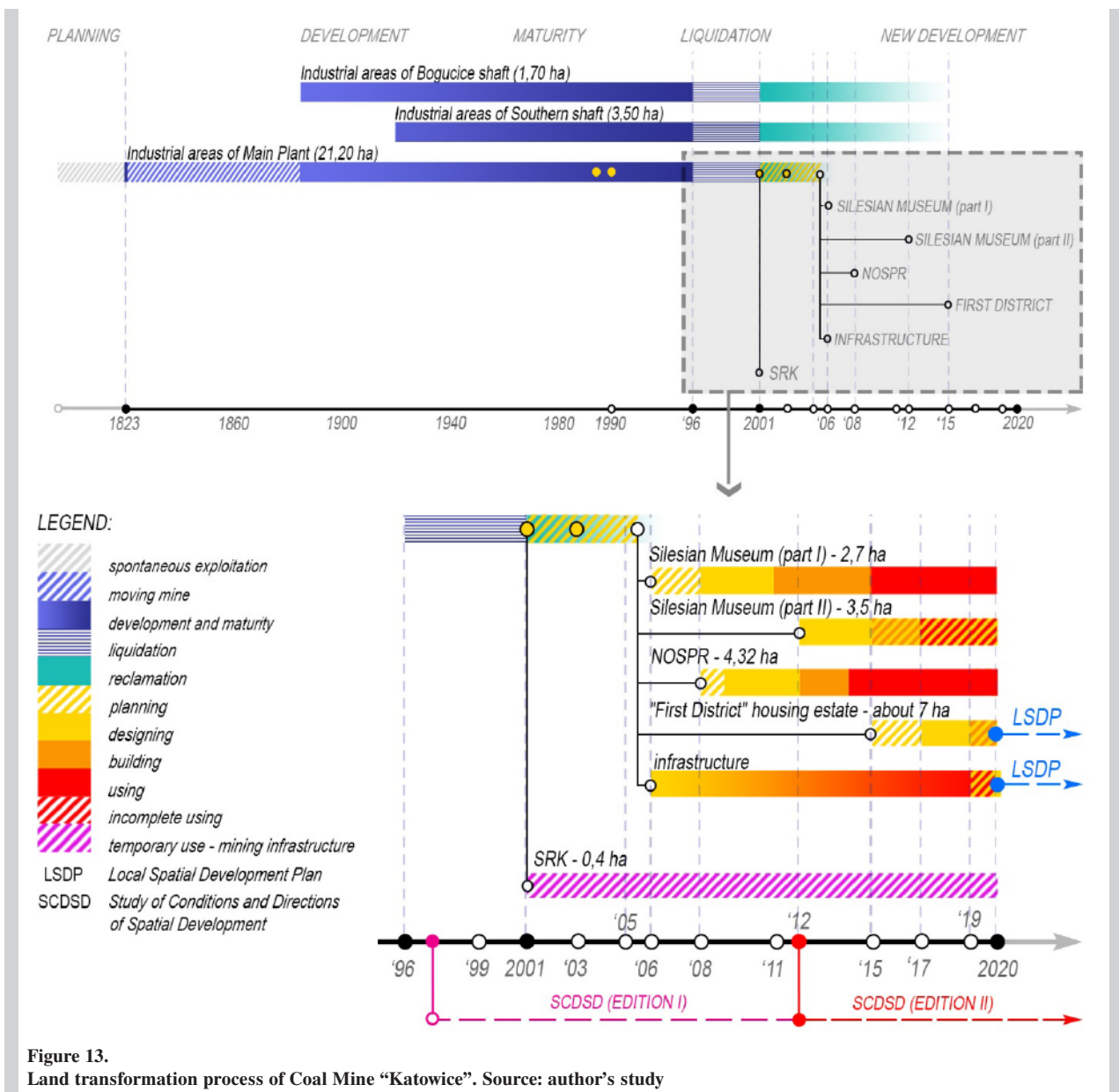


Figure 13. Land transformation process of Coal Mine “Katowice”. Source: author’s study

located in the city centre. The initial conceptual studies for the area on Rodzińskiego Avenue had an urban planning-architectural character. They played an important role in the further planning for the redevelopment of the site and have set new directions for the city's development.

In 2001, the Katowice City Hall began efforts to establish Local Spatial Development Plan for the area.

When the mine property was sold and taken over by the different owners, the process of transforming the post-mining was divided into smaller, independent investment measures. This procedure allowed the receiving of various funds for the construction of individual investments. The new land use was designed individually through architectural competitions for selected plots or, in the case of private investors, through private contracts without existing master plan (as it had not been approved), nor were they regulated by the Local Spatial Development Plan. The latter was finally established in 2020, and its scope covered only the northern part of the former mine site, in the area of Katowicka and Henryk Mikołaj Górecki Streets.

Today, about 56.5% of the former Katowice mine site has been redeveloped and is used as a cultural and educational space. They are located here in distinctive heritage buildings which have been adapted for new functions, as well as in new buildings that subtly refer to their original function and the traditions of the region. However, although the Silesian Museum, the NOSPR and the MCK are praised by architects and receive more and more awards, the Culture Zone has not become a new centre of social life. It is used only temporarily for cultural, business, sports or educational events, or as a parking lot for downtown commuters. As a result, part of its original potential has been lost. According to residents and experts, the Culture Zone needs to be revitalised by introducing additional functions to enliven urban life and integrate the local community.

The transformation of the “Katowice” coal mine site was a strategic measure, due to location in the center of the region's capital. The allocation of a large amount of public funds enabled the construction of high-quality facilities that were to become a flagship of the city. However, the chosen model of ad hoc land use and the lack of a coherent vision for the functioning of the area in the form of an LSDP or masterplan contributed to a kind of spatial chaos in which the public space between the buildings became a result of individual projects. This situation is also

reinforced by the monofunctionality of land use, which is responsible for the creation of an “enclave” in the center of the city.

In order to avoid the disadvantages of developing the Cultural Zone when planning the transformation of large brownfield sites, special attention must be paid to the scope of development. The key to the effective management of post-mining areas is the development of a project/development plan for the entire area to be transformed and its consistent implementation, which will allow the investor to achieve its intended goals.

The concept of post-mining land should also take into account the different forms of land use. This is particularly important when developing large areas in a highly urbanized city space (city centers, areas adjacent to residential districts). Such an approach contributes to the sustainable development of the whole area and increases the social, economic and environmental benefits of the new land use

An additional advantage is the involvement of local authorities, private investors, experts and the local community in the transformation process. By integrating different perspectives, it becomes possible to develop a coherent vision for the future use of the area that takes into account the different goals, needs and expectations and contributes to its sustainable development. By participating in decision-making processes, residents not only express their views, but also feel more involved and responsible for shaping the space in which they live. This participation leads to greater acceptance of the proposed changes and minimizes potential resistance to them.

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