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ANALYSIS OF DEGRADED POST-INDUSTRIAL AREAS FOR REDEVELOPMENT – CASE STUDY

24.1 INTRODUCTION

The dynamics of economic changes in Poland, including mainly the process of transforming the socialist economy into a market economy, left a large number of undeveloped brownfield sites. Often closed plants are located in city centres or densely populated districts. They are abandoned or are used to a small extent, and their revitalization would require significant expenditure. It happens that the sites could find new uses, but: their visual state is deterring from taking any action, they have unregulated proprietary status, strong contamination, and often contains difficult to adapt objects.

An example of a place suitable for redevelopment is the area of the liquidated plant of “Huta Jedność” (steelworks).

24.2 RESTRICTIONS OF INVESTMENT

Liquidated plants are often located in centres or near urban centres. They are potentially good investment areas – they have good road and rail connections to an urban centre and have an power utility infrastructure.

Unfortunately, in assessment of investors many factors make the shortcomings prevail over the advantages of post-industrial areas. The major factors influencing land reclamation include the lack of complete information on the key features of the site – "unreasonable" division of the land, unclear ownership, land contamination, or underground infrastructure or its chaotic residue that complicates construction work. As a result of this state of affairs, attention of investors is directed to areas not yet developed, which, although distant from the centres, are free of embarrassing legal, environmental and construction “surprises”.

The key to the investor's interest in the redevelopment of post-industrial area is to have a detailed analysis describing as exactly as possible past of the site, effects of the past activity until today, the current state of the site and possible directions of its redevelopment.

24.3 CHARAKTERISTIC OF THE ANALYZED AREA

The area that was chosen for an exemplary analysis is the site of the "Huta Jedność" plant in Siemianowice Śląskie liquidated in 2006. The steelworks was established in Siemianowice in 1836. Until 1948 it functioned under the name of "Laura" to be renamed to "Huta Jedność". The plant manufactured a wide range of products such as pig iron, pudding steel, martensitic steel, sheet metal, rails, pipes and others. In 2003 the steelworks were put into liquidation. The area of the former plant was taken over by a private company [4]. By the end of 2016, 99% of the buildings were demolished. Several buildings remained, but their technical condition is very bad.

At present, the area of the former steelworks is covered with a debranched rubble from the demolition of the buildings belonging to the plant.

The area of liquidated "Huta Jedność" is located in the central part of Siemianowice Śląskie, adjacent to the main streets of the city – Śląska and Powstańców streets.

The area of the former plant covers an area of about 16 hectares, has an irregular shape and its boundaries are as follows:

- from the north – Głowackiego street,
- from the east – Piastowska street,
- from the south – Składowa street,
- from the west – Sienkiewicza street and Katowicka street.

It is a characteristic visual element of the part of the city adjacent to the southwest part of the area of the former plant „Huta Jedność".

24.4 CASE STUDY

Below, tables 24.1 to 24.26 provide an exemplary assessment of the site in question for reuse. The analysis is based on selected parts of the post-industrial land evaluation procedureproposed by M. Pierściński and B. Białecka [2].

Table 24.1 Proper name or short characteristics of an area

Area of steelworks „Huta Jednosc"

Tabela 24.2 Code and location

Area code	Place:	Commune:	District:	Post code:	Street, No.:
-	**Siemianowice Śl.**	**Siemianowice Śl.**	**Siemianowice Śl.**	**41-106**	**Dworcowa**

Table 24.3 GPS coordinates – extreme points

N 50° 18' 4,1" N E19° 1' 42,8" E	**E 50° 17' 43,06" N 19° 2' 1,70" E**	**S 50° 17' 42,17" N 19° 1' 52" E**	**W 50° 17' 46,69" N 19° 1' 35" E**

Source: Own elaboration based on [6]

Table 24.4 Area size

16 ha

Table 24.5 Numbers of record parcels of the post-industrial area

2923/215, 2364/154, 2924/215, 2925/215, 2364/154, 3167/304, 3168/304, 1841/348, 1843/347, 1845/344, 3349/304, 2868/304, 3272/304, 3271/304, 3274/304, 3273/304, 2870/304, 3268/304, 3348/304, 2939/27, 2940/26, 3313/28, 3311/304, 3310/304, 3312/31, 294/29, 2941/25, 2943/29, 2938/30

Source: Own elaboration based on [5]

Table 24.6 Is the legal status of the area regulated?

Yes	No	No information

Table 24.7 Immediate intervention required

Yes	**No**

Table 24.8 Utilities supply (networks in the area)

Type	Yes	No
Electrical energy	**Underground medium voltage line**	
Potable water	**X**	
Industrial water	**X**	
Sanitary sewage system	**X**	
Combined sewer system	**X**	
Rain water sewer system	**X**	
Gas	**X**	
Central heating	**X**	
Telecommunications system	**X**	
Other (what)	**Network unindentified**	

Source: Own elaboration based on [6]

Table 24.9 Existence of buildings

Developed	**Undeveloped**	No information

Tabela 24.10 General description of buildings (name, cubature, initial and current form of occupancy, property)

Demolished industrial buildings a few buildings from the side Dworcowa street (bad technical conditio), water tower in south west part of area

Table 24.11 Local road and rail infrastructure

Road and rail facilities	No. of road/railway	Distance from the area
The nearest existing local, regional or district road	**S86** **DK 94**	**3,5 km** **3,5 km**
The nearest existing regional, district road – planned or under construction	**-**	**-**
The nearest regional or local railway	**Railway No. 161 Katowice Szopienice Północne – Chorzów Stary**	**50 m**

Source: Own elaboration based on [6]

Table 24.12 Local transmission lines in the vicinity of the area

Type of infrastructure	Distance from the area
Sanitary sewage collector	**In the area**
Medium-voltage power line	**In the area**
Low-voltage power line	**In the area**
Gas pipeline	**In the area**

Source: Own elaboration based on [5, 6]

Table 24.13 Local air pollution emission sources

Emission source neighbourhood	Yes	No
The area is adjacent to a sewage treatment plant – distance of less than 500 m		**X**
The area is adjacent to a point air pollution emission source – distance of less than 500 m		**X**
Sewage treatment plant in the area		**X**
Point air pollution emission source in the area		**X**

Source: Own elaboration based on [5, 6]

Table 24.14 General internal evaluation of the transport network

Type	General description (degree of development, technical condition)
Road network and car parks	**Total destroyed**
Rail infrastructure	**No**
Other (walking paths, cycle lanes, horse riding trails, ski lifts etc.)	**No**

Table 24.15 General types of current area use

Production and service of production	Yes	No
Services		**X**
Housing		**X**
Communication and transport		**X**
Recreation in the open air		**X**
Cultivated green areas or environment protection		**X**
Open waters		**X**
Agriculture		**X**
Unused area	**X**	
Other (specify)	-	

Table 24.16 Document specifying the directions of future area development (tick)

Local area development plan	**X**	Land use and development directions plan	

Table 24.17 Activity which contributed to degradation

Power engineering		Machine industry		Waste disposal		Opencast mining	
Metal industry		Constructio n industry		Municipal waste management		Ore extraction	
Chemical industry		Paper industry		Wastewater treatment		Exctraction of agregates	
Coke industry		Textile industry		Cement plant		Sand extraction	
Iron and steel industry	**X**	Wood industry		Transport		Rock mining	
Non ferrous metallurgy		Food processing		Coal mining		Exploitation of peak	

Table 24.18 Presence of waste in the area

Type of waste (classification according to the waste law)	Present	Not present	No information available
Hazardous		**X**	
Municipal	**X**		
Other than hazardous	**X**		
Neutral		**X**	

Table 24.19 Additional important information about the area (e.g. occurrence of downslopes over 15%, water holes, ditches, shallow underground voids, particularly large parking areas or storage yards, garages, vast scrubland, wild animals, etc.)

The area is covered with rubble. Under the surface of the ground are remnants of underground development and other infrastructure

Table 24.20 Suggested preferences of area development directions in the light of its genesis – scoring

Production and production service areas	Service development areas	Residential development	Communication and transport areas	Outdoor sport and recreation	Green areas, nature
X	**X**	**X**			

Table 24.21 Possibility so multifunctional management (I work-live-rest) in the light of the genesis of the area and its size (only area over 20 ha)

Yes	**No**

Table 24.22 GZWP (Central Groundwater Reservoir) and groundwater intake)

Criterion	Yes/No
Existence of groundwater intake	**No**
Location in a groundwater intake protection zone	**No**
Location within GZWP	**No**

Table 24.23 Road facilities of supralocal significance

Road facilities	nr drogi	odległość
The nearest motorway or major road	**S86** **A4**	**3,5 km** **7 km**
The nearest national road	**DK 94**	**3,5 m**
The nearest motorway junction	**A1 and A4**	**23 km**

Źródło: opracowanie własne na podstawie [6]

Table 24.24 Is the area located within a terrain defined as „Environmental resources protection, strengthening of protected areas system and multifunctional development of open areas – preferred economic functions?"

Yes	**No**

Table 24.25 Railway facilities of supralocal significance

Railway facilities	Name	Distance
The nearest national railway line	**Railway S1**	**9 km**
The nearest railway trans-shipment station	**Katowice Szopienice Południowe**	**13 km**

Source: Own elaboration based on [6]

Table 24.26 Other transport-related facilities of supralocal significance

Facility	Name	Distance
Road border crossing	**Chałupki**	**92 km**
Railway border crossing	**Chałupki**	**92 km**

Source: Own elaboration based on [6]

SUMMARY

The analysis presented above is of a very simplified nature. Comprehensive site analysis should include among others a number of specialized studies on polluting

substances, hazardous substances.

Despite constant improvement of solutions facilitating revitalization processes (cluster linkages, collaborative networks, information, communication, monitoring platforms, surveys and environmental audits [1, 3]), the collection of data (including those generated by cooperation process between authorities of various levels, enterprises and local community, related in a specific way to the site), and continuous updating and sharing of this data is still a matter not fully resolved.

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Abstract: *Degraded post-industrial areas have considerable potential for redevelopment. However, the unstabilized legal situation, lack of information on the area, its infrastructure and key features make investors prefer undeveloped land. The following paper is an attempt to perform a preliminary analysis of a selected post-industrial site, in order to facilitate the choice of how to re-use it.*

Key words: *post-industrial area, redevelopment*

OCENA TERENÓW POPRZEMYSŁOWYCH W CELU POWTÓRNEGO ZAGOSPODAROWANIA – ANALIZA PRZYPADKU

Streszczenie: *Zdegradowane tereny poprzemysłowe posiadają spory potencjał do ponownego zagospodarowania. Jednak nieustabilizowana sytuacja prawna, brak informacji o terenie, jego infrastrukturze i kluczowych cechach powodują, iż inwestorzy preferują tereny niezagospodarowane. Poniższe opracowanie jest próbą dokonania wstępnej analizy wybranego terenu pogórniczego, w celu ułatwienia wyboru sposobu jego powtórnego zagospodarowania.*

Słowa kluczowe: *tereny poprzemysłowe, ponowne wykorzystanie*