



**POLITECHNIKA
GDAŃSKA**


WYDZIAŁ ARCHITEKTURY

Imię i nazwisko studenta: Radosław Bielucy
Nr albumu: 159667
Studia drugiego stopnia
Forma studiów: stacjonarne
Kierunek studiów: Architektura
Specjalność: Architektura (studia w j. angielskim)

PRACA DYPLOMOWA MAGISTERSKA

Tytuł pracy w języku polskim: Rola kolei jako elementu infrastruktury turystycznej na przykładzie Kolei Nadzalewowej

Tytuł pracy w języku angielskim: The role of rail transport as an element of tourist infrastructure on the example of Kolej Nadzalewowa

Potwierdzenie przyjęcia pracy	
Opiekun pracy  <i>podpis</i>	Kierownik Katedry/Zakładu (pozostawić właściwe) <i>podpis</i>
dr inż. arch. Agnieszka Błażko, doc. PG	

Data oddania pracy do dziekanatu:

Table of contents

01. Streszczenie.....	3
02. Abstract.....	3
03. Key words	3
1. Railway in Poland.....	4
1.1 Shortened history of rail transport.....	4
1.2 Railway history in Poland	4
1.3 Fall of the railway lines	5
1.4 Advantages of railway line reconstruction.....	5
2. Examples of use of closed railway lines	6
2.1 Regional railway in Serbia	6
2.2 Ulikowo - Kalisz Pomorski – Wałcz railway line	7
2.3 Paris-Vincennes Railway.....	7
2.4 The High Line.....	7
2.5 Baeza-Utiel Railway	7
2.6 Zielona Góra Railway	8
2.7 Białogard-Świdwino Railway	8
3. Railroad as a tourist attraction	8
3.1 Żuławska Kolej Dojazdowa narrow-gauge railroad.....	9
3.2 Railway line no. 213 from Reda to Hel	9
3.3 Kolej Nadzalewowa railway line	9
4. Elbląg - needs, tourist potential of the city and region.....	11
4.1 General characteristics of the town	11
4.2 Directions of the development.....	12
4.3 Recreation in Elbląg.....	12
4.3.1 Dolinka Park	12
4.3.2 Municipal swimming pool.....	13
4.3.3 Traugutta Park.....	14
4.3.4 Modrzewie Park.....	14
4.3.5 Kajki Park	15
4.3.6 Planty Park.....	15
4.3.7 Wojska Polskiego Park.....	15
4.3.8 General Bolesław Nieczuja-Ostrowski Park.....	16
4.3.9 Municipal Forest Bażantarnia	16
4.4 Recreation around Elbląg.....	18
4.5 Tourism according to the Study of Conditions of the City and Municipality of Elbląg ...	19
5. Design conditions and decisions.....	21

5.1 Description of the project idea.....	21
5.2 Design solutions.....	21
5.2.1 Model of the railway line functioning	21
5.2.3 Models of railway stops	22
5.2.4 Kamionek Wielki.....	23
5.2.5 Kadyny	23
5.2.6 Elbląg Zawada.....	25
5.2.7 Structural and architectural description.....	27
5.3 Summary	27
6. Bibliography.....	28
7. Illustrative annexes.....	29

01. Streszczenie

Tematem pracy dyplomowej jest projekt odtworzenia nieczynnej Kolei Nadzalewowej łączącej Elbląg z miejscowościami znajdującymi się nad Zalewem Wiślanym i Braniewem. W pracy poruszony został problem zamykania linii kolejowych prowadzących do wykluczenia transportowego oraz sposoby adaptacji pozostałości infrastruktury kolejowej. Przytoczony problem dotyczy opisanej w pracy Kolei Nadzalewowej, która została zamknięta dla ruchu pasażerskiego i od lat niszczeje. Opisana została również turystyka rejonu elbląskiego, jak i samego miasta Elbląga. W ostatniej części został przedstawiony autorski projekt odtworzenia Kolei Nadzalewowej zakładający funkcjonowanie kolejowej linii pasażerskiej obsługujące zaprojektowane przystanki kolejowe (dworce) i jej połączenie z infrastrukturą turystyczną. W szerszym zakresie zaprojektowano okolice przystanków w Kamionku Wielkim, Kadynach i dworca w Elblągu, gdzie przewidziano tereny pod park rekreacyjny dla mieszkańców i turystów z regionu.

02. Abstract

The subject of the diploma thesis is a project of restoration of closed Kolej Nadzalewowa train line, connecting Elbląg with the towns located along the Vistula Lagoon and Braniewo. The paper deals with the problem of closing railway lines leading to transport exclusion and methods of adapting the remains of the railway infrastructure. The cited problem concerns the Kolej Nadzalewowa train line, described in the work, which has been closed to passenger traffic and has been deteriorating for years. Tourism in the Elbląg region and in the city of Elbląg itself was also described. In the last part, the author's project of restoration of Kolej Nadzalewowa was presented, assuming the functioning of a passenger railway line serving the designed railway stops (stations) and its connection with tourist infrastructure. The area around the trains stops in Kamionek Wielki, Kadyny and the railway station in Elbląg has been designed to a greater extent.

03. Key words

<kolej> <dworzec> <przystanek kolejowy> <Kolej Nadzalewowa> <architektura> <architektura krajobrazu> <Elbląg> <Region Elbląski>

<railway> <train station> <railway station> <architecture> <landscape architecture> <region of Elbląg>

1. Railway in Poland

1.1 Shortened history of rail transport

The railway in the form of horse-drawn carriages appeared already in ancient times. According to research, as early as 4,000 years ago, in the copper age, gouges (so-called ruts) were used in stone road slabs. The ruts were found in the quarries of ancient Egypt and Greece. At the turn of the Middle Ages and modern times, the invention of wooden rails was used in mines where heavy loads had to be transported. However, they were very flawed. The wagons on muddy rails derailed quickly, and the wood quickly rotted on wet ground. The evolution of railways from forms of industrial transport (mainly in mines) to publicly accessible motorised transport has been initiated in the UK - the country where the industrial evolution began. In 1807, the first horse-rail for passenger transport appeared there. Since 1804, attempts have been made to use steam locomotives. The first steam locomotive to be commercially successful was the 'The Salamanca' constructed by Matthew Murray. On the European continent, the railway also started with horse-traction. The first publicly accessible lines appeared in 1827. All over Europe at the end of 1830 there were 332 km of railway lines (completed or under construction). The introduction of steam locomotives as the sole form of traction took about 7 years to the UK, although work on the first Prussian steam locomotive was already underway in 1816. In the best developed countries, the construction of long-distance lines took place very quickly. In Western Europe, railway networks initially developed fastest in countries where there were no good other lines of communication. A certain delay in the construction of the railways can be seen in France, which has a good road network, and in the Netherlands, which has a good system of inland waterways. Outside Europe, the largest railway network was built by the United States, where, despite the size of the country, a network density similar to that of Europe was achieved. The construction of railway networks in Asia, especially in Eastern Asia (China, Japan, Korea) continued in the interwar years. In Central Asia, a railway with the most important relations was created only on Russian territory. In the Middle East, it is only recently that an effort has been made to build a railway network in Iran and Israel, and its construction in Saudi Arabia is planned. In South America, transcontinental connections were built until the 1950s. However, they have not been able to function for long in view of the spread of road and air transport. The emergence of a transcontinental network in Africa was promised in colonial times (it would be cut into lines of different track gauges), but the times of decolonisation led to its decomposition. The railway network in Africa can actually only be talked about in its northern and southern parts.

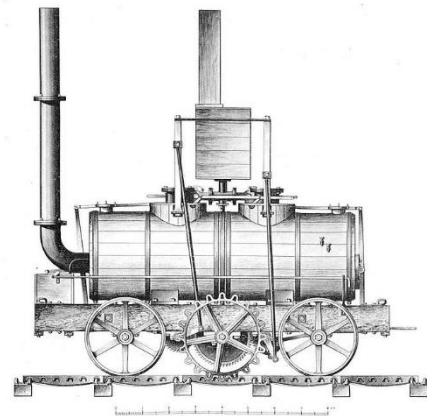


Figure 1. The Salamanca locomotive from 1812.
Source: www.britannica.com

1.2 Railway history in Poland

The railway in Poland did not have an easy history. This mode of transport began to operate years ago, when the country was divided between the three partitioners, each with a different system of service. In the Austrian partition, for example, there was left-hand traffic. After the restoration of independence the consolidation and reconstruction of the destroyed railway system on the territory of Poland at that time was struggling. The process of electrification has begun. Another blow to the railways took place during the Second World War through the destruction and dismantling of the infrastructure and rolling stock by the occupiers. The task of the first years of post-war Poland was to restore the railways to their working condition. Several lines were removed during the communist era but a number of significant investments were also made, e.g. the Central Railway Main Line (Centralna Magistrala Kolejowa) connecting Silesia with Warsaw or the Metallurgical Broadway Line (Hutnicza Linia Szerokotorowa). In the 1970s, the best result was achieved with 1151.7 million passengers transported in 1977.

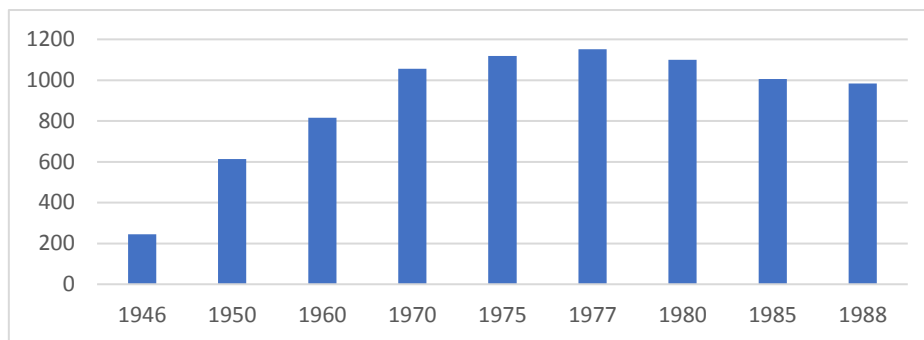


Table 1. Number of passengers transported between 1946 and 1988 (million). Source: own study based on A. Wielądek, *Zrównoważony rozwój transportu warunkiem rewitalizacji kolei w Polsce*, „Problemy Kolejnictwa”, nr 156

1.3 Fall of the railway lines

The worsening condition of the rolling stock, the lack of investment, the popularisation of cars and the underestimating of problems by the management of the Polish State Railways (PKP) led to the actual collapse of the railways in Poland in the 1990s. The process of closing railway lines has been the largest in Europe - the length of railway lines in Poland fell from 26,228 km in 1990 to 22,560 km in 2000 (over 14% of the line length).

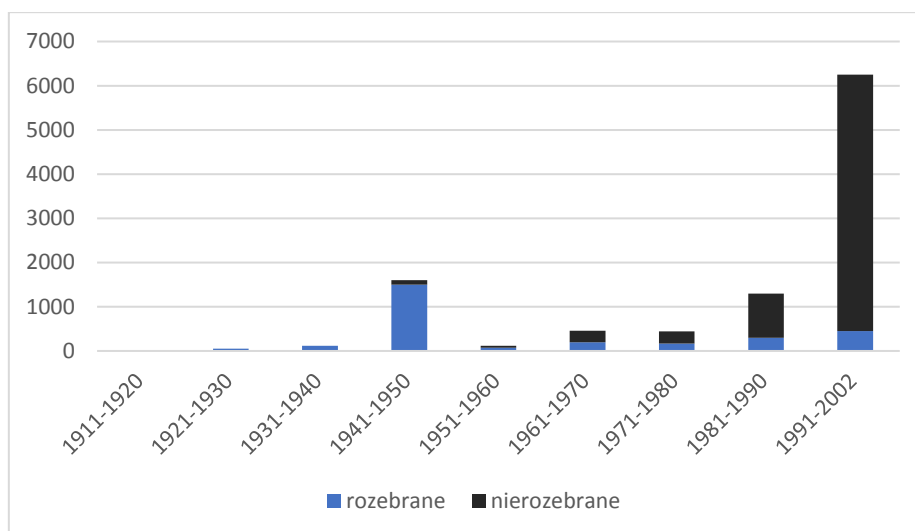


Table 2. Closure of normal rail lines for passenger traffic on the current territory of Poland by decades (km of lines). Source: Own study based on Zbigniew Taylor, *Rozwój i regres sieci kolejowej w Polsce*, Instytut Geografii i Przestrzennego Zagospodarowania im. Stanisława Leszczyńskiego PAN, Warszawa 2007

The hope for the railway became the possibility for the regional governments to take over the railway from the PKP, but problems arose when the line passed through two or more voivodships.

1.4 Advantages of railway line reconstruction

The maintenance of railway lines, especially agglomeration railways concentrated around a larger city, has its main advantages:

- Development of the whole region, without major differences between the towns due to the time of access to the main town in the region,
- Integration of the dispersed settlement structure into one organism,
- Minimization of pollution and noise by reducing car traffic in favour of railways.

Reconstruction of the line can not only allow quick access to a larger town, but also develop local industry and services. The liquidation of the 1990s and the beginning of the 21st century deprived over 2 million people of access to railways, including several major Polish cities, such as Jastrzębie-Zdrój

(89,000 inhabitants), Lubin (72,000), Łomża (63,000), Mielec (60,000), which led to their degradation in favour of larger centres with convenient connections.

It is worth noting that the progressive liquidation of PKSs may lead to a complete cut-off of smaller towns and cities from basic services, forcing residents to the use of cars. The isolation of residents may have a disastrous effect, leaving the elderly alone without the possibility of access to a medical care centre. In younger people it can cause frustration caused by being cut off from cultural centres and schools. When closing railway lines, residents are often deprived of the only possible commute to a larger city.

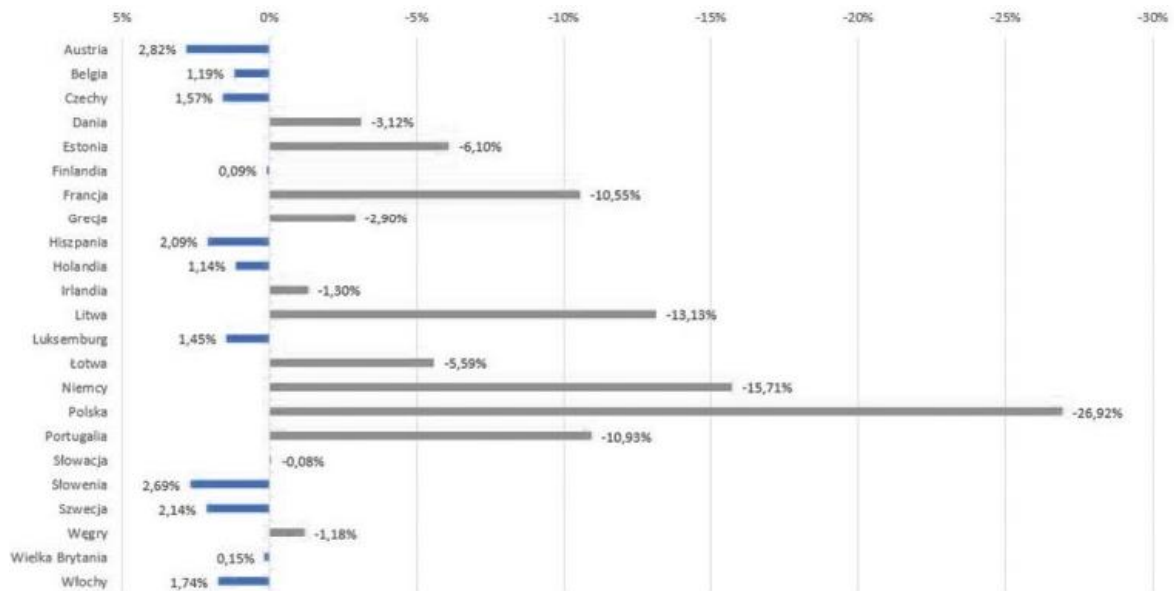


Table 3. Changes in the length of railway lines in EU countries over the period 1990-2003 (Germany and Italy since 1995). Source: Own study based on T. Dyr., P. Wełnic, *Infrastruktura transportu kolejowego w Unii Europejskiej i Polsce*, „Technika Transportu Szynowego”, 2006, nr 7-8, 23-38

Opinions are divided on the resumption of connections on non-existent lines. Currently, the work is being resumed on two (out of many closed) lines. The problem of provincial governments, apart from the funding itself, is the question of the land on which the railway tracks are located, because they do not belong to them. As far as the government's approach is concerned, an end to the decommissioning of the lines has been announced, but the closure decisions adopted by 2015 are still in force, and this applies to around 6% of the line network.

2. Examples of use of closed railway lines

There are several ways to use neglected or already closed railway lines, among others: renewal of an active line, reconstruction of a closed line, or adaptation of a closed line for a tourist attraction, a bicycle path.

2.1 Regional railway line in Serbia

An example of the renewal of an active, neglected line is the improvement of the operation of the regional railway system in the South Bačka District in northern Serbia. A study was carried out in 2008 which showed that the quality of transport is very low. The railway consisted of outdated, low-frequency rolling stock, which often had failures, resulting in cancellations and delays. As far as regional buses are concerned, they were expensive (up to 60% more expensive than train travel) and often unreliable, especially in winter. The idea was to revitalise the railway line between Belgrade and Vršace. It has been found that a higher proportion of railways in passenger and freight transport can help improve the region's economy and the social status of its inhabitants. The revitalisation plan included the renewal of the existing track, the reconstruction of the station and the bridge over the River Tamiš, the construction

of a new electrified second track with five bridges and the replacement of used rolling stock with new ones. According to studies carried out in the first few months after the new opening of the line, revenue on the line has tripled, as has the number of passengers on the line.

2.2 Ulikowo - Kalisz Pomorski – Wałcz railway line

An example of reconstruction of the closed line can be used as a project carried out in the West Pomeranian Voivodeship through which connections on line 403, on the Ulikowo-Kalisz Pomorski-Wałcz section have been restored. The line, built between 1881 and 1895, was intended to stimulate the development of local agriculture and manufacturing. After the war, the line served passenger and cargo traffic. In 1994, railway stations were closed down, turning them into passenger stops. In 2000, the connection from Piła to Ulikowo was suspended, while Wałcz, as one of the most important centres of the province, had no connection to Szczecin. In 2006, at the request of the inhabitants, the Stargard Szczeciński-Kalisz Pomorski connection was resumed, in 2007 Piła-Wałcz, unfortunately, due to the line's failure, the operation was suspended and the Wałcz-Kalisz Pomorski section remained inactive. As part of the Regional Operational Program for the Zachodniopomorskie Voivodeship for 2007-2013, a project to modernise the entire line was developed. The reconstruction of the line allowed for the development of the areas along the line by increasing their accessibility, economic attractiveness and spatial cohesion. This eliminated the social exclusion of Wałcz residents due to the lack of free movement opportunities, as well as increasing the trip opportunities of Szczecin residents. The high quality of travel (provided by the new rail buses) and low ticket price (compared to buses) ensured a positive reception of the railway offer by the inhabitants of the region, and the number of passengers has remained at the same level since the opening.



Photo 1. Vršac station in Serbia. Source: vrsac.mojkraj.rs



Photo 2. Promenade plantée in Paris.

Source: www.theguardian.com

2.3 Paris-Vincennes Railway

Another way to use the former railway line is to create a linear tourist attraction, like the Promenade plantée in Paris on the historic line to Vincennes. The 4.6 km long promenade starts at Opéra Bastille and ends at Bois de Vincennes. The transformation of a closed railway line into a park promenade with gardens has enabled the revitalisation of one of the poorest districts in the city.

2.4 The High Line

The Promenade plantée project was the inspiration for the well-known adaptation of the New York High Line. The inactive line has been adapted to the city park, which is now considered one of the most unusual in the world. The project was developed between 2009 and 2011. The park is located about 9 m above the ground and runs for 22 quarters of New York City along the west bank of Manhattan. The resulting attraction has made the closed railway line one of the most visited places in New York. It revived the Chelsea district, which was in poor condition at the end of the 20th century. The implementation of the project helped to preserve the specific character and atmosphere of this part of the city and changed the standard railway tracks into a symbol of the city.

2.5 Baeza-Utiel Railway

In the case of the Vía Verde de la Sierra de Alcaraz and Vía Verde de La Manchuela projects, this is a concept for transforming the never completed Baeza-Utiel railway line in southeastern Spain into tourist

routes with a total length of about 187 km. The original project of the line was to build 366 km of track. Work on the section started already in 1927, then the work was stopped every few years to stop it completely in the 1960s. In the 1990s, the railway tracks were dismantled, but the overpasses and other technical facilities were left. In 2002 the transformation of the line into a tourist route started. The remaining tunnels and viaducts are attractions along the entire route, which is divided into zones with different types of activity, vegetation and landscape. In the future, there are plans to convert the entire section of the old railway line into a tourist route.



Photo 3. The Vía Verde de la Sierra de Alcaraz tourist route created on the former railway line
Source: www.latribunadealbacete.es

2.6 Zielona Góra Railway

An example of transformation of a railway line into a bicycle path is a project made on the former railway line in Zielona Góra, which was a part of the railway connecting Zielona Góra with Szprotawa. "Zielona Strzała" ('The Green Arrow'), because that is how the project was called, was carried out in 2013. It allows to cross from one end of town to the other. The path forms a separate corridor with green areas. It is equipped with elements of small architecture, playgrounds for children.

2.7 Białogard-Świdwino Railway

The same was done in the case of creation of a cycling route of about 125 km called 'the route of coiled tracks', which was led along former railway embankments. It starts near Białogard, then passes through Bobolice, Grzmiąca, Barwice, Połczyn-Zdrój to Świdwin. These areas have a weak socio-economic indicator and are located outside the main tourist areas. The location of railway stations both on the route (Grzmiąca) and at its beginning and end (Świdwin and Białogard) creates opportunities to use the route as an independent tourist attraction. The fact that there are nodal points on the route expands the possibilities of choosing this attraction as a cycling destination. In addition, due to the fact that the route runs on a railway embankment, the elevation profile is very mild which significantly increases the number of potential customers.

3. Railroad as a tourist attraction

The railroad itself can be a tourist attraction, especially the narrow-gauge railroad, characterized by a lower capacity than the normal track, usually built on short sections. It can be used to transport both goods and passengers. It is created mainly in places where a normal railroad, due to terrain and rolling stock conditions, would be unprofitable (mountain, park and forest railroads). The beginnings of the narrow-gauge railroad in Poland date back to the 19th century. For a long time the narrow gauge railroad played an important complementary role to the standard railroad, and in the second half of the 20th century it was used mainly for regular transport of passengers and goods over short distances. The network of narrow-gauge railway lines was relatively dense in Poland. Unfortunately, to this day only few routes have been maintained, which are mainly a tourist attraction and a kind of cultural heritage providing the opportunity to travel by unique historical train through places of special natural and historical value.

3.1 Żuławska Kolej Dojazdowa narrow-gauge railroad

An example of such a solution is the Żuławska Kolej Dojazdowa narrow-gauge railroad, located in the Nowy Dwór County, part of the non-existent Gdańska Kolej Dojazdowa narrow-gauge railroad. It allows for tourist access to seaside towns from Nowy Dwór Gdański. There are two lines operating within the network: from Nowy Dwór Gdański to Stegna and from Sztutowo to Mikoszewo. Train traffic is seasonal, from May to September and at the turn of October and November during holidays. Year after year, the line is becoming more and more popular, i.e. 43 thousand passengers were transported in 2014, 64 thousand in 2017 and 74 thousand in 2019.



Photo 4. Stop of the Żuławska Kolej Dojazdowa in Nowy Dwór Gdański.
Source: www.zulawyimierzeja24.pl

3.2 Railway line no. 213 from Reda to Hel

Another type of tourist line is line no. 213 leading from Reda to Hel, where regional trains operate year-round, and during the holiday season long-distance trains also arrive. The line connects mainly seaside towns of the Hel Spit with the Tri-City and its surroundings. Despite its seaside location, the line is characterized by sections typical of submontane railroads. In 2012-2015 the line underwent modernization, thanks to which the total journey was reduced by 17 minutes.

3.3 Kolej Nadzalewowa railway line

The system that was a tourist attraction in itself, ran by the Vistula Lagoon and connected Elbląg with Braniewo.

The beginnings of railways in Elbląg dates back to 1852, when the railway line between Malbork - Braniewo was opened for use. It was a part of Prussian Eastern Railway - a line connecting Berlin with the capital city of East Prussia - Königsberg. The direct connection between Elbląg and Königsberg took place in 1853, and with Berlin in 1873. Despite of efforts of the city authorities, Elbląg did not obtain connections with the



Photo 5. Tolkemicko railroad station around 1900
Source: wolneforumgdansk.pl

Kingdom of Poland - the Malbork-Mława line built in 1876 bypassed Elbląg. A similar situation occurred in the construction of the section of the Vistula Railway from Toruń through Grudziądz and Kwidzyn to Malbork as a supplement to the Vistula waterway in Gdańsk. Unfavourable transport isolation did not change the opening of local railway line from Bogaczewo through Pasłęk and Morąg to Olsztyn in 1883.

New and direct railway line, yet local, Elbląg got through opening coast railroad running to Braniewo. The services started on 5th September 1899 as a private route leading to workplaces located on the north of Elbląg, brick factories placed by the Vistula Lagoon (e.g. in Nadbrzeże, Kadyny and Tolkmicko.

In 1892 a committee for the construction of the line was set up (consisting of the Frombork canon Julius Pohl, Eng. Carl Ziese, owner of the Elbląg machinery workshops and Frederick Moebus, owner of the brickyard and estate in Suchacz). The line built by the *Haffuferbahn AG* (HUB for short) ran then from the East Railway Station (nowadays the Main Station) along the eastern edge of the New Town to the railroad station to the west of Corpus Christi church, Elbląg Miasto (German: *Elbing Stadt*) then to the north to the station nearby the Elbląg brewery, Elbląg Angielskie Źródło (English Spring; German: *Elbing Englisch Brunnen*), later Elbląg Zdrój, then to Braniewo as it is now. At the final station it was possible

Wogonap	Wogonap	Reimannsfeide	Succasa Haffschlöbchen	Succasa Heffschlöbchen	Panklau Cadinen	Teikemit	Wreck Forsthaus	Frauenburg	Sankau	Stangendorf	Eraunberg Oberur	Braunsberg Ostbht.	3. KL
III. Stufe											Haffuferbahn		Einfache Fahrt
Gültig auf der durch Lachung bezeichn. Strecke. Währ. der Fahrt aufzubewahren und auf Verlang. z. Revision vorzuzug.											A ² № 3587		
Elbing	Englisch Brunnen	Gr. Rübarn	Gr. Rübarn	Wogonap	Stihinort	Succasa Haffschlöbchen	Panklau Cadinen	Wreck Forsthaus	Wreck Lutenthal	Frauenburg	Sankau	Stangendorf	RM 0,45

Photo 6. HUB Ticket. Source: *Księga Elbląska* collective work edited by Jerzy Zaskiewicz, Wydawnictwo Yama

to change trains to Królewiec (German: Königsberg). Kolej Nadzalewowa was used for both freight and passenger traffic. It undoubtedly had an impact on the recovery of economic life in Elbląg and the surrounding area. The main companies in Elbląg, like Schichau mechanical plant, Komnick car factory, Loeser & Wolff cigar factory, Englisch Brunnen brewery, Neufeldt tin factory etc., frequently used line services. As far as passenger traffic is concerned, the line has gained popularity mainly among holiday-makers during the summer season commuting to the nearby villages. According to the 1927 timetable, the line was on four time a day on working days, and on Sunday and holidays six times a day. Moreover, three times a day it has traveled a shorter route - it finished its run in Tolkmicko twice and once in Suchacz.

As a result of World War II, some objects, such as the bridge over the Pasłek River near Braniewo were destroyed. The reconstruction of the damage lasted until 1949 and the line went under the management of the PKP while remaining a local route. However, due to the weak development of car transport it was an excellent mean of transport for the inhabitants of the river basin working mainly in Elbląg. In 1958 passenger traffic was suspended on the part of the line from Elbląg Miasto station - until 1982 passenger trains completed their run at Elbląg Zdrój station. The line "through the city" was liquidated after the construction of a ring road connecting the railway station and the station Elbląg Zdrój between 1975 and 1982. The tracks were gradually dismantled and the Elbląg Miasto station building has been converted to a residential house for railwaymen families. In the summer, a large amount of passengers were tourists spending time by the Vistula Lagoon. However, in the 1990s the number of Kolei Nadzalewowa passengers decreased significantly, what had a major impact on the increasing problems of maintaining the profitability of the line. The train services with the highest attendance were removed from the timetable. At the beginning of 2006, the route was crossed only by two trains a day. On April 1, 2006, Elbląg - Tolkmicko - Braniewo trains were finally suspended. Railway stations had been closed and the



Photo 7. Elbląg Miasto Station at the beginning of the 20th century and in 2011. Source: www.portel.pl

maintenance of platforms and tracks had stopped. In accordance with the Ordinance No. 1 of the Warmińsko-Mazurskie Voivodeship of 31 January 2007, the route of Kolej Nadzalewowa was included in the Protection Plan of the Wysoczyzna Elbląska Landscape Park, as one of the elements of the natural landscape. In summer 2010 the service from Grudziądz and Elbląg to Braniewo were resumed during the summer vacations, but only on Saturdays and Sundays as "tourist train". The connection was launched thanks to the partners: the Marshal's Office of the Warmińsko-Mazurskie Voivodeship in Olsztyn and local governments of the areas along the railroad line. The operator of the connection was the Pomorskie Towarzystwo Miłośników Kolei Żelaznych (Pomeranian Society of Iron Railway Lovers). In 2011 PTMKŻ together with local authorities, railroad carrier ARRIVA RP, ship owner "Monika", bus carrier "Tolko" and company PKP PLK Zakład Linii Kolejowych in Olsztyn made an attempt to return to pre-war traditions and create a coordinated transport offer in the "train+ship+bus" system in the area of the Vistula Lagoon. In 2014, due to lack of financing, the railroad courses were suspended. The railroad line between the Elbląg Zdrój and Braniewo stops was designated for liquidation by PKP PLK Gate. Some of the local governments - mainly Tolkmicko and the Braniewo district - wanted to take it over and use it for tourism - one of the ideas were dreins bought by Stowarzyszenie Przyjaciół Ziemi Tolkmickiej Lanzania (the Association of the Friends of Tolkmicko Land Lanzania) but PKP PLK did not agree to use them.



Photo 8. Arriva train at Tolkmicko station. Source: www.portel.pl

4. Elbląg - needs, tourist potential of the city and region

Elbląg is the second largest city in the Warmińsko-Mazurskie region. However, since 2000 the population has been steadily declining due to negative natural growth and migration. According to GUS forecasts for 2003-2030, the population is projected to fall from 118 000 in 2020 to 107 000 in 2030. There are many factors that affect this situation, for example a poorly developed labor market and low wages compared to larger cities like Gdańsk, emigration abroad, poor offer of universities.

4.1 General characteristics of the town

The research have indicated that residents are linked to their place of residence (*Badanie potencjału społeczno-gospodarczego Elbląga i Suwałk*, report prepared by Kantor Doradcy w Zarządzaniu Sp. z o.o. i Instytut Badawczy IPC for Elbląg, as part of the project of the same title). According to a survey conducted in Elbląg in 2010, the city was perceived as a relaxing place. Of the two types of attachments to Elbląg (traditional and active) traditional attachment was characterized by persons more "incumbent" and with weaker cultural capital, while active attachment, in turn, characterized persons with high cultural capital and accompanied the perception of Elbląg as more exciting. This means that actions to enhance the stimulating role of the city, for example by increasing the number of interesting events can help to

increase the population's attachment to Elbląg. Elbląg is perceived by its residents as an average city, without character, and its own and unique climate.

Elbląg is the 'capital' of the Elbląg sub-region comprising the counties: Elbląg, Braniewo, Iława, Ostróda, Działdowo and Nowe Miasto Lubawskie. The zone of Elbląg's most powerful influence creates one of the two (next to the Olsztyn sub-region) the most powerful development potential of the regions of the voivodship. As the capital of the subregion and the seat of local Elbląg serves as an administrative center for the inhabitants of neighboring municipalities. There are public administration units in the city, both local and state. In addition, Elbląg is the center for providing public health services, educational (at medium and higher levels) and cultural. The medical services of Elbląg hospitals are used not only by the inhabitants of the city but also by the inhabitants of the entire region.

High and rising unemployment in Elbląg (the unemployment rate in 2012 was 17%-one of the worst results in Poland among the cities of NA district rights, and the worst score among cities in the population range from 100 to 200 000) and the structure of the unemployed has a negative impact on the economic potential of the city. Nevertheless, Elbląg is an important job center for local residents. The largest group of commuters is the inhabitants of the closest municipalities like Tolkmicko, Milejewo, Elbląg, Markusy, Gronowo Elbląskie and Pasłęk.

4.2 Directions of the development

Elbląg's "Development Strategy" highlights the city's potential for growth in the area of IT, construction, metal engineering and tourism industries which potential is one of the stronger sides of the city, however it is only used to a limited extent. The participation of economic operators in the tourist and hotel sectors in Elbląg, the municipalities of the Elbląg and Braniewo districts are lower compared to the municipalities of the eastern part of the pomerania region, especially with Krynica Morska, Stegna, Sztutowo but also Malbork. Elbląg's problem in the field of tourism is the lack of a tourism product understood as a package of goods and services which are a special tourist interest and allow to meet their destination which is increasingly not "seeing" a place, but "experiences" related to it. There are several tourism development organizations in Elbląg, however their efforts are inefficient and uncoordinated. There is no agreement between them and between these entities and local government. Elbląg's external image is also a problem, which is either not recognizable at all, or it is associated rather as a center situated in a peripheral region, not worth considering.

Among the opportunities for Elbląg, SWOT analyzes included: Improving the accessibility of the Vistula Lagoon and Baltic Sea, adapting the Lagoon to the needs of inland waterway transport (including the removal of legal barriers to free international shipping), modernization of Elbląg Canal and reactivation of Kolei Nadzalewowa train line.

The development of tourism has been adopted as one of the operational objectives. To this end, the following lines of action are foreseen: creation and promotion of Elbląg's tourist product and the Elbląg region; based on synergies between the various parts of the region in terms of natural, historical, architectural and cultural assets; organize tourist routes in the city and region; protecting the unique values of the natural environment as a basis for the development of tourism; improvement of the environment in the event of degradation; improving the quality of the Vistula Lagoon, protecting the air and green areas; staff training for the tourism sector (comprehensive – language, tourist services).

4.3 Recreation in Elbląg

There are 8 city parks in Elbląg (including municipal forest 'Bażantarnia' as a recreational function of the city) with a total surface area of 313 ha and 29 ha of town squares and greenery.

4.3.1 Dolinka Park

Park Dolinka (Germ. *Pulvergrund*, later XXV-lecia PRL Park) is located in the eastern part of the city. It was founded in 1934. After the war it was organized and expanded with new bridges, connecting two banks of Kumiela (Dzikuska) River which flows along the park, a volleyball court, a shooting range that

also placed before the war, the pedestrian alleys and the characteristic water cascading on the river were renovated. In the 1970s an amphitheater was built in the park where concerts, performances and festives took place. The object from the beginning of its existence has not undergone major repairs. It is currently very neglected and not suitable for use. The city has no money to renew it or even to destroy it. In recent years, two spatial forms have been located in the central part of the park. Small investments have been made, e.g. the construction of a new playground for children, however, EU funding for the modernization of the entire complex was not obtained (the city submitted an application to the Poland-Russia Cross-Border Cooperation Programme 2014-2020 for funding the project, but it was not accepted).



Photo 9. Mural by the waterfall in Dolinka Park. Source: kultura.wm.pl

4.3.2 Municipal swimming pool

North of Dolinka Park, on its edge there is the area of the former city swimming pool, built in 1934 as an integrated complex with the new park. It was considered to be one of the largest in Europe and has become one of the most important recreational and sports attractions in East Prussia. It was filled with water from the Kumiela River. The length of the pool was 340 m, width from 80 to 125 m, and depth from 40 cm to almost three meters. It was divided into two parts, the first one was for bathers and the second one for swimming equipment users. Additionally, in the bathing sector, the swimming pool trough had a separate place for children. The area of the water surface reached 3.4 ha. In winter, the object operated as an ice rink. After the war, the area also served as a place of rest and recreation for the inhabitants. The swimming pool was officially closed in 2012 due to cyanobacterial problems and is becoming more and more neglected every year. Nearby, in 2015 the Water Recreation Center Dolinka was opened and functions as a roofed complex with a 25-meter sports pool, recreational pools and a sauna zone. As part of the Elbląg Europark project, a revitalization of the open swimming pool was established. In 2016 a competition was announced, which was won by the design team ArchitekciPL Jerzy Hnat from Gliwice.



Photo 10. Remnants of the municipal swimming pool. Source: www.info.elblag.pl

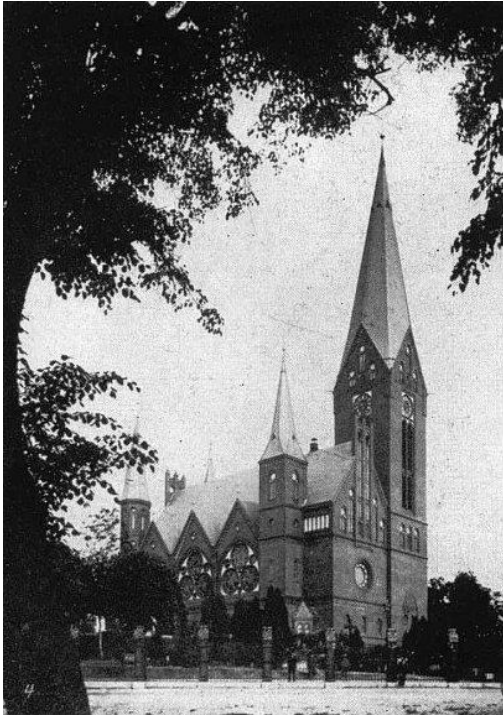


Photo 11. Former St. Anne's Church
Source: commons.wikimedia.org

4.3.3 Traugutta Park

Traugutta Park is located in the central part of the city, near the City Hall. It was created in 1960 on the site of the former cemetery next to (demolished after World War II) St. Anna's Church. The remaining cemetery chapel serves today as the Greek Catholic Church of the Nativity of St. John the Baptist. The park alleys run along the cemetery alleys. There is a malfunctioning fountain in the park with a figure of a frog (which a few years ago was moved to the fountain on 1 Maja Street). The surrounding edges and stairs of the fountain were made of tombstones. Until 2000, statute of Theseus stood at the entrance to the park from Romuald Traugutt Street and it was replaced after. 6 spatial forms were placed in the park (5 of them were created during the 1st Biennale of Spatial Forms in 1965, one sculpture "Elixir" was created in 2014 as part of the project "Moving the Form"). Moreover, on the hill where the church once stood the Pope's Cross was placed in 1999. There is a new playground for children in the park and the last project from the Budżet Obywatelski (Civic Budget) from 2019 implies the renovation of the alleyways. The path called the Oliwski Park which runs north of the park along the Kumiela River leads to another park, Dolinka.

4.3.4 Modrzewie Park

Modrzewie Park is located in the northern part of the city, bordering on the Zawada housing estate. Originally, the area of today's park included the properties of Jerusalem and Emmaus, which have existed there since the Teutonic Knights' times, and since the beginning of the 19th century the estate of *Schesmershof* has joined them. There was an old Prussian castle wall in the park. At the beginning of the 20th century the area was bought by Carl H. Ziese. The following facilities were built within its borders: a villa with an orangery on the Castle Hill (Germ. *Schloßberg*), two ponds, a sports stadium on the south side, a tennis court, a shooting range, and an observation tower on the north side, which has survived until today. Apart from that, from the remains of the buildings



Photo 12. Villa Ziese in the current Modrzewie Park
Source: www.marienburg.pl



Photo 13. Yoga classes in Modrzewie Park
Source: www.info.elblag.pl

you can see a gate house, fragments of stairs and walls. From the southern side there is a stadium with a pitch. The park is a place where orienteering and cross-country skiing take place, and in 2019, thanks to the Budżet Obywatelski (Civic Budget) 2018, the "Aktywne Modrzewie" project was organized with free yoga and stretching classes, park games and a soap bubble festival. The project from the Civic Budget 2019 assumes renovation of alleys along Mazurska Street, construction of a new playground and gym "under a cloud". However, there are no plans to renovate the gate house and the observation tower, which are becoming increasingly neglected.

4.3.5 Kajki Park

Kajki Park is located in the northern part of the city. It was established in 1928 as a base for a youth hostel. It was called the Ogród Różany (German: *Rosengarten*). It is divided into two parts, crossed by Pionierska Street (named after the first Polish settlers in 1945). In the southern part there is (as before the war) a rose garden. Until the 1950s this part of the park was decorated with a fountain with angels, a work of Elbląg sculptor Erna Becker-Kahns. The northern part of the park, once called the Big Rose Garden had an English park character. Nowadays there is a playground and green areas for recreation. Through this part of the park flows Psia Struga River which falls into the basin of a small pool located on Pionierska Street. There are 6 spatial forms in the park (5 of them were created during the 1st Biennale of Spatial Forms in 1965, one of them was created in 2014 under the project "Moving the Form"). The park has undergone many renovations, in 2019 the surface of the alleys was replaced, earlier the rose avenue and the tank on Pionierska Street in the southern part of the park were renovated.



Photo 14. Rose Garden in Kajki Park. Source: www.skyscrapercity.com

4.3.6 Planty Park

Planty Park is located in the central part of the city. It is one of the oldest parks in Elbląg. It was established in the 18th century when the following land leveling (Pol. *plantowanie*) was started on the site of the rampart which was part of the New Town fortification. The area was taken over by the "Humanitas" resort which built its headquarters on it and created the *Casino Garten* park. There was a fountain, stage and concert shell in the park. Its main attraction was the "snail", (Germ. *Schneckeberg*) hill left by the former bastion. A grotto was hollowed out in this hill, where drinks were served. In 1936 the park passed into the hands of the city and was renamed to *Stadtgarten*. After World War II the park was renamed to Karol Świerczewski Park. The park stand, the layout of alleys as well as the grotto survived the war but the place is now empty. There were 3 spatial forms placed in the park during the 1st Biennale of Spatial Forms in 1965. In 2010 the project documentation for the Planty Park Revitalization Program was developed, but the project was not realized. In recent years only a new playground was built.



Photo 15. Planty Park in the early 20th century

Source: elblag.fotopolska.eu

4.3.7 Wojska Polskiego Park

Wojska Polskiego Park is located in the central part of the city at 3 Maja Street. It was established in 1960s on the site of the former cemetery belonging to St. John's Church. It was given the name of the 20th anniversary of the Polish People's Army which is commemorated by a memorial plaque placed on an erratic boulder. There used to be a Baptist church on the opposite side of the street near the present shopping passage. It is the smallest park in Elbląg, about 0.6 ha. There is a spatial form created during the 1st Biennale of Spatial Forms in 1965 in the park.

4.3.8 General Bolesław Nieczuja-Ostrowski Park

General Bolesław Nieczuja-Ostrowski Park is located in the eastern part of the city between Mickiewicza and Żeromskiego streets. The majority of the park is occupied by recreational areas and is not very wooded. In 2013 a skatepark was built on its grounds, and in 2018 an educational garden of urban farming type was created.



Photo 16. Urban farming in General Bolesław Nieczuja-Ostrowski Park. Source: www.info.elblag.pl

4.3.9 Municipal Forest Bażantarnia

Bażantarnia Municipal Forest (Germ. *Vogelsang*) was established in the 18th century. In 1810-11 an tavern was built, which nowadays functions periodically as the restaurant "Myśliwska". At the beginning of the 20th century a concert shell, a rest shed "Parasol" and an observation tower (German: *Bismarckturm*, demolished after World War II) were built there. During the summer the whole cultural life of Elbląg moved to Bażantarnia. It was the place where birthday celebration of the King of Prussia, the choice of a chanterelle master, concerts were organized and theatrical plays were staged including pre-premiere presentations before the artistic season of Gdańsk or Królewiec. During World War II the park was not destroyed, but was renamed to "Bażantarnia" (Pheasantry) due to the multitude of these birds in the forest. In 1945, Nadleśnictwo Elbląg (Elbląg Forest Inspectorate) was established from which first 45 ha and then 263 hectares were separated for the city's recreational forest areas. There is a mixed stand in Bażantarnia with a predominance of deciduous trees (beeches, oaks, alders, hornbeams, maples, birches, aspens, elm trees, lime trees). Among coniferous trees there grow spruces (predominantly), pines, firs and larch. The place is also characterized by huge horsetails (up to 2



Photo 17. Reconstructed "Parasol" (Umbrella) in Bażantarnia. Source: parkikrajobrazowewarmiimazur.pl

m high) and a large number of fern. There are also species of typical mountain and foothill plants, rare in this region, such as: wild garlic, *aconitum variegatum*, coralroot, northern firmoss, white wood-rush, ostrich fern, *pleurospermum austriacum*, red elderberry, *valeriana excelsa*, *veronica montana* and mentioned above northern giant horsetail. The animals living in the Bażantarnia are wild boars, deer, roe deers, foxes, badgers, hares, forest and house martens, european polecat, weasel, black and red squirrel. The rich bird world is represented by nightingales, black storks, hawks, owls and woodpeckers. The area of Bażantarnia is a breeding ground for wild ducks which later usually move to the nearby Lake Drużno. Unfortunately, pheasants have not been observed since the 1990s. Bażantarnia is the most popular place for rest and recreation of Elbląg inhabitants and its most popular places are: a glade with shelters and bonfire places, hiking trails and a concert shell. Sport and city events are organized in Bażantarnia e.g. the annual "Summer Music Salon" takes place in a concert shell and recently an outdoor cinema.



Photo 18. The open-air cinema in Bażantarnia. Source: www.info.elblag.pl

The shell (in accordance with the 2019 draft Civic Budget 2019) will be renovated. Bażantarnia also includes the Krucza hill (German: *Thumbberg*), located in its southern part. It is popularly referred to by Elbląg residents as *Góra Chrobrego*. From its top you can observe the panorama of Elbląg. Until 2018 it was possible to use the winter sports centre located

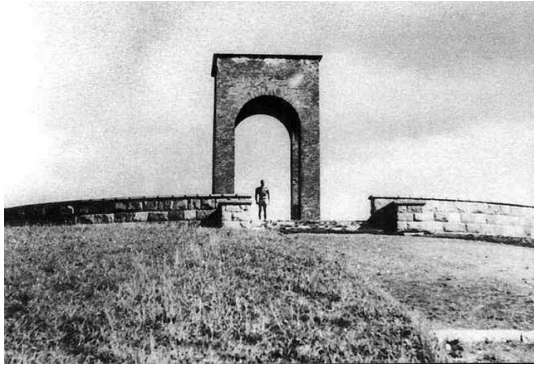


Photo 19. Monument on Gęsia Góra around 1939.
Source: dziennikelblaski.pl

during or just after World War II. The triumphant arch survived until the 1960s. In 1965, a toboggan run over 800 m long and a ski slope with a 600 m long ski jump were built in a social act (of which nothing remained to this day). In 2013, the area of Gęsia Góra within the framework of the Elbląg civic budget was cleaned. Shelters, benches and rubbish bins were set up and a place for a bonfire was designated but the place quickly became a victim of acts of vandalism.

In 2003, a concept for the development of about 156 ha of the eastern part of Elbląg was created under the name European Park of Recreation (Europark). The areas from the municipal swimming pool in Moniuszki Street through Bażantarnia to Łęczycka Street and between Marymoncka, Chrobrego, Podchorążych, Gen. Józefa Bema and Wschodnia Streets were to become a new tourist and recreation complex which was to include, among others, walking and trekking routes, a concert shell, a canoeing trail, winter, cycling and horse sports centres, a water park and the so-called adventure park. The project established 3 main zones: commercial where hotels and restaurants were to be located, urban and eco where facilities with the least human intervention were to be built. Among the zones also 20 functional complexes were established, each with a different use of space. It is not known whether the project will ever be created. The Elbląg residents are particularly looking forward to the implementation of its first phase which envisages the modernisation of the municipal swimming pool in Spacerowa Street.

on it. There was an illuminated slope with a drag lift. The company managing the slope bankrupted and the increasing temperature in winter does not encourage to continue running the centre. In close proximity to Krucza there is another hill called Gęsia (German: *Gänseberg*), known as *Gęsia Góra*. In the 1920s, the hill was supposed to be turned into a memorial-musoleum in honour of the Elbląg inhabitants killed in the First World War. Eventually, a four-walled triumphal arch was built inside of which there was an eternal flame and a statue of a bronze kuros placed. The ceremonial unveiling of the monument took place on 28 August 1938. The statue disappeared in unexplained circumstances



Figure 2: Map of parks in Elbląg. 1.Modrzewie Park 2.Kajki Park 3.Dolinka Park 4.Traugutta Park 5.Planty Park 6.Wojska Polskiego Park 7.General Bolesław Nieczuja-Ostrowski Park 8.Bażantarnia 9.Gęsia Góra. Source: own study

4.4 Recreation around Elbląg

One of the most important recreational places in the Elbląg area is the Vistula Lagoon with its surrounding areas of various origins and different character of high natural and landscape values where several forms of nature protection have been established: landscape parks, Natura 2000 areas and nature reserves. The lagoon itself is a fairly shallow reservoir with a low salinity of 2.5‰ (brackish waters). It is separated from Gulf of Gdansk by the Vistula Spit and has only one connection with Baltic Sea through The Pilawa Strait located on the Russian side. Due to its depth the area is a good place for rest and recreation, especially for families with children but this potential is untapped. There are several places to bathe, e.g. in Kadyny, Tolkmicko, Frombork or Suchacz from the Warmińsko-Mazurskie Voivodeship but they are missing from Vistula Spit in the Pomorskie Voivodeship. Vistula Lagoon is also suitable for water sports such as sailing, windsurfing or kitesurfing. Recently many attempts have been made to expand the tourist infrastructure of a given area, e.g. by marking out cycling routes, including Green Velo, recreation of the St. James' Route, construction of new or modernisation of existing tourist facilities, organisation of artistic open-air events, however the region is still relatively rarely visited by tourists. The uniqueness of the landscape, high natural and scenic values of Wysoczyzna Elbląska (Elbląg Upland) is emphasised, on the basis of which agritourism, qualified hiking and cycling tourism (including birdwatching), as well as spa tourism (climatotherapy, hydrotherapy) can be developed. The tourist situation improved minimally after 2012 when the regulations on local traffic (LBT) were introduced, as a result of which more Russians come mainly for shopping, as well as for recreation.

A significant problem of the lagoon related to the potential tourist use of the lagoon is the state of the water which is assessed as bad. This is due to their eutrophication, which causes algae to bloom during the summer as well as the fact that the reservoir receives water from rivers, sewage treatment plants (e.g. Elbląg, Frombork, Tolkmicko, Kaliningrad, or Baltijsk), agricultural areas and industrial plants located on the Russian side (according to estimates 75% of sewage remains untreated).

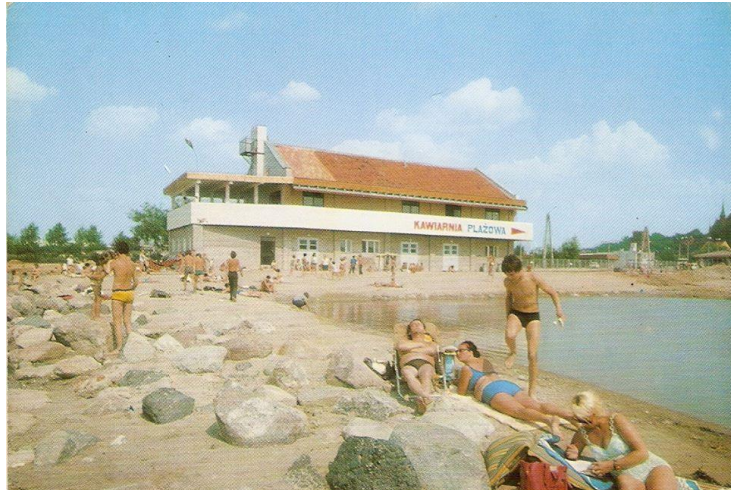


Photo 20. Beach in Frombork in the 1980s. Source: www.portalbraniewo.pl

Another issue is the underutilisation of the shipping potential in the lagoon.

Seasonal passenger shipping between Polish ports (Elbląg, Tolkmicko, Krynica Morska, Kały Rybackie) has been significantly reduced over the last several years. In 2015 the water tram ran only on the section Tolkmicko - Krynica Morska. Plans have been prepared to renew waterways within Vistula Lagoon, e.g. Pętla Żuławska (Żuławska Loop) program or the MDW Międzynarodowa Droga Wodna E70 (International Waterway E70) project to connect Antwerp with Klaipėda. An important waterway for the lagoon is the connection with Elbląg Canal with unique historic slipways leading to Ostróda through the Elbląg River and Drużno Lake (Europe's largest waterfowl reserve). Sailing through Piława Strait is limited by the Russian side due to the stationing of the Baltic Fleet.

An important element when discussing Vistula Lagoon is the project of crossing Vistula Spit, the implementation of which began in 2019. The project assumes, among other things, that shipping in Vistula Lagoon will be intensified but since the creation of the cross-cut may result in the destruction of priority habitats for the Natura 2000 area and a forecast reduction in bird species and fish populations, the project arouses controversy. The profitability of the project is also questionable.

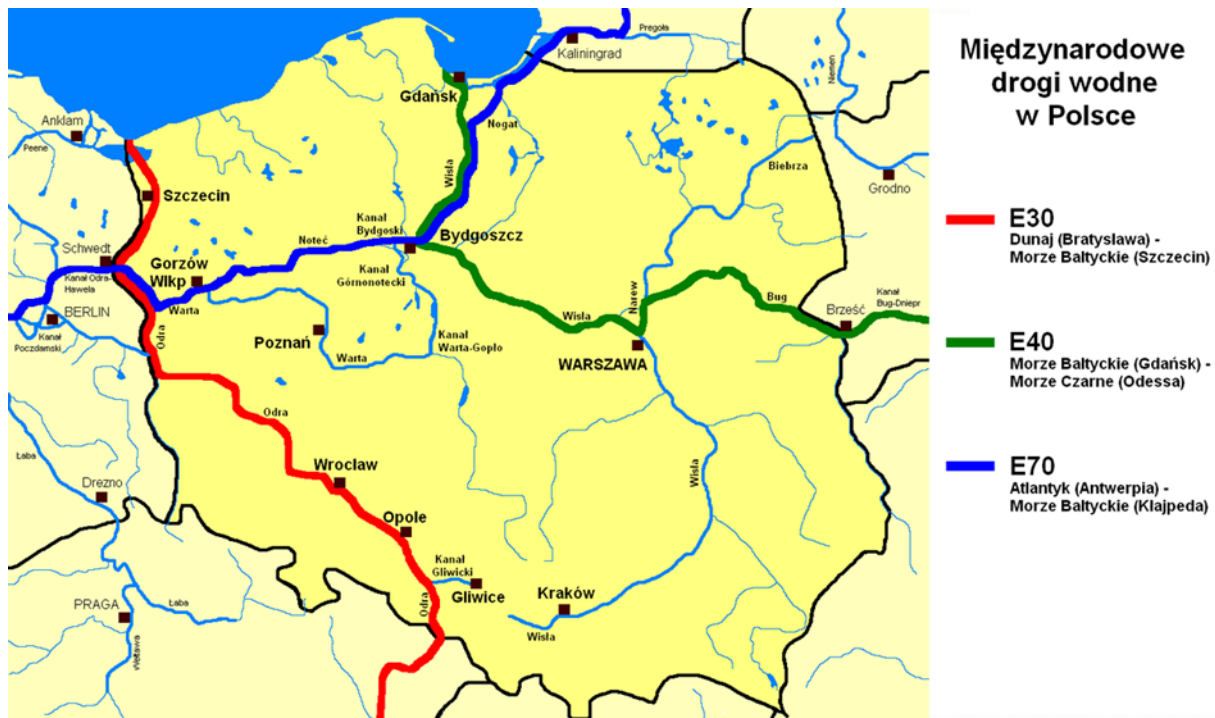


Figure 3. Map of international waterways in Poland Source:www.kzgw.gov.pl

The Vistula Lagoon surrounds the Vistula Spit to the north, Wysoczyzna Elbląska (Elbląg Upland), Równina Warmińska (Warmia Plain) and Wybrzeże Staropruskie (Old Prussian Coast) to the south and east, and the Żuławy Wiślane to the west. Each region differs in its genesis, terrain and natural values. Vistula Spit, which is a sandy dune dike was created as a result of sandy material being deposited by waves and wind. Pine forests and typical dune communities dominate here; Żuławy Wiślane - a flat and depressed area was formed by depositing river deposits through Wisła. Agricultural areas dominate here; Wysoczyzna Elbląska and Równina Warmińska were formed by the activity of the ice sheet. The first one is a moraine hill and the second is located in the place of the former glacial water reservoir. They are dominated by agricultural areas, conifers in Wysoczyzna Elbląska and mixed forests in Równina Warmińska. Each of the individual areas is characterised by high natural values, therefore field forms of protection have been established in their area.



Photo 21. Project of the Vistula Spit canal. Source: www.portalmorski.pl

4.5 Tourism according to the Study of Conditions of the City and Municipality of Elbląg
 According to the findings of the spatial development directions at the Study of Conditions of the City and Municipality of Elbląg of 21 January 2010 the main facilities of the tourist infrastructure were considered to be the main facilities:

- multifunctional recreation and sports complex - Europark including Gęsia Góra and Góra Chrobrego (skiing, paragliding, skating, horse riding, swimming);
- tourist service centre - the Old Town and Wyspa Spichrzów (Granary Island) (hotels, guest houses, riverside hostels);

- sailing base (marina) on the island downstream of the Elbląg river (sailing, canoeing, rowing);
- a system of marked walking routes in the forests: Bażantarnia, Jagodziński Forest, Szwajcaria Próchnicka; increasing tourist capacity and the possibility of penetrating attractive areas in an environmentally safe way;
- system of cycling routes, connected with cycling routes of Wysoczyzna and Żuławy;
- golf course;
- shelters for hiking tourism in the area of Góra Chrobrego, Dąbrowa, Próchnik;
- a sea station with a ferry base in the area of Elbląg - Zdrój;
- multifunctional airport in Elbląg with a hardened runway.

The areas of (described above) Mierzeja Wiślana, Wysoczyzna Elbląska, Żuławy Wiślane were also listed as areas of "outstanding natural and landscape values" as potential for "extensive hiking and qualified tourism: hiking, cycling, horseback riding and skiing, and the areas of Żuławy especially for cycling, canoeing and motor tourism".

According to the Conditionality Synthesis of 26 October 2006, no extension of the existing railway network is envisaged. "On the contrary, there is a tendency to replace passenger trains with rail buses for low passenger attendance. This applies to services: Elbląg - Braniewo."

However, according to the Land Development Directions of the Study of Conditions of the City and Municipality of Elbląg of 21 January 2010, "shuttle bus route along the existing track, serving the area of the city was planned. In connection with this, additional railway stops were designed, namely:

- "Elbląg - Lotnisko" in the area of the flyover of the planned route (04KD Z1/2),
- "Elbląg - Osiek" in the area of the junction of the designed (23KD Z1/2) and Malborska Street,
- "Elbląg - Zawodzie" in the area of Nizinna Street,
- "Elbląg - Żuławy" in the area of Trasa Unii Europejskiej (04KD G2/2),
- "Elbląg - Zawada" in the area of the intersection of Mazurska Street (10KD G2/2) with Odrodzenia Street (05KD G2/2),
- "Elbląg - Port" in the area of the intersection of Mazurska Street (10KD G2/2) with the planned route (06KD G2/2).

No expansion of the then network of inter-regional and regional lines was envisaged, only an increase in the attractiveness of connections to Kaliningrad was expected, especially during the summer. Some connections were closed within 10 years of the study's creation.

- "01KK - interregional line: Białystok, Kaliningrad-Elbląg-Szczecin, within the city a two-way electrified line. Additional stops "Elbląg - Lotnisko" and "Elbląg - Osiek" were provided for railcars; (the Gdynia-Kaliningrad connection through Elbląg was liquidated in 2010, the attempt to return in January 2018 proved to be a one-off)
- 02KK - Elbląg - Braniewo regional line, single-track, non-electrified. Additional stops "Elbląg - Zawodzie", "Elbląg - Żuławy", "Elbląg - Zawada", "Elbląg - Port" are provided for the railcars; (Kolej Nadzalewowa; closed in 2006, then opened seasonally until 2015)
- 03KKK - a designed trackway communicating the 02KKK relation with 01KK towards Malbork in the south-western part of the city."

L.p.	Nr linii	Nazwa linii (przebieg)	Elektryfikacja	Liczba torów	Uwagi
1	204	Malbork – Mamonowo	częściowo	1-2	Dwutorowa i zelektryfikowana na odcinku Malbork – Bogaczewo
2	217	Bogaczewo – Mamonowo	nie	1	Szerokotorowa (rozebrana na odc. Bogaczewo – Kurowo Braniewskie)
3	220	Bogaczewo – Olsztyn Gł.	tak	1	
4	221	Braniewo – Gutkowo	nie	1	
5	254	Tropy – Braniewo	nie	1	Ruch turystyczny
6	-	Słobity – Bartoszyce	nie	1	Rozebrana w 1945 r. (częściowa używana jako bocznicą do początku lat 90-tych)
7	-	Tropy – Myślice	nie	1	Rozebrana w 1945 r.
8	-	Ostróda – Orneta	nie	1	Rozebrana w 1945 r.
9	-	Pieniężno – Gr. Państwa	nie	1	Rozebrana w 1945 r.

Table 4. List of railroad lines in the Functional Area of Elbląg. Source: study based on: <http://www.bazakolejowa.pl>; <http://www.plk-sa.pl>.

In the plan of the Elbląg Functional Area from 2015, as an opportunity for the transport system, the use of the railway line no. 254 (Elbląg - Braniewo through Tolkmicko) for tourist purposes (integration with cycling and water transport) was indicated. It was proposed that areas on disused and demolished lines should serve as cycle paths (at that time Kolej Nadzalewowa operated periodically).

One of the objectives of the Development Strategy for Elbląg is the integration of the Elbląg Functional Area, the development of infrastructure improving supra-regional cooperation - in particular road transport (expressways S7 and S22, connection with A1), water transport and communication (development of the port of Elbląg, improvement of accessibility to the port from the land and water side, elimination of navigation barriers, deepening of waterways, reconstruction of roads and bridges), rail transport (railway lines E-65 and 204), bicycle routes (network of routes of supra-regional importance, Eastern Poland Cycling Route) and border infrastructure (extension of the sea border crossing and construction of a mass terminal for clearance of merchant ships in Elbląg, inclusion of sea border crossings in the MRG (local border traffic), development of water tourism, broadening the scope of control in trade exchange).

5. Design conditions and decisions

5.1 Description of the project idea

The analysis of the needs of the inhabitants of Elbląg (Elbląg Functional Area) as well as of the potential of the tourist area of the Vistula Lagoon led to the main idea of the project- the reconstruction of the passenger line of Kolej Nadzalewowa (described in chapter 3.2) which has been closed for several years and connecting it with recreational (tourist) infrastructure as beaches, sailing harbors, parks, bike paths, etc. The project would be a response to the loss of the tourist potential of the floodplain areas in the last dozen or so years (mainly due to the lack of use of the shipping potential) and would allow them to develop again. Moreover, the project would be a response to the problem of hindered mobility of smaller towns in the region with Elbląg or Braniewo.

5.2 Design solutions

5.2.1 Model of the railway line functioning

The project involves the connection of the railway line of Kolej Nadzalewowa (no. 254) (hereinafter referred to as section A) with the former railway line no. 204 from Malbork to Braniewo via Elbląg closed in 2004 (its shorter section Bogaczewo-Braniewo with the line number 217 was closed in 2013) (the section Elbląg-Braniewo, hereinafter referred to as section B). The designed way of operating the railway line is presented in diagram no.3. Both sections are of similar length (53 km and 54 km respectively) so

there was assumed an identical time of the travel in both cases. The way of running the train traffic as single-track lines has been preserved. Trains start from the same station - Elbląg Główny and run in circular route- X clockwise, Y- counterclockwise. The trains pass each other in the middle of the lap, at stations with additional platforms (Elbląg Główny or Braniewo). Doing half a lap assuming a train speed of 80-90 km/h would take (with stops at stations) about 50-60 minutes.

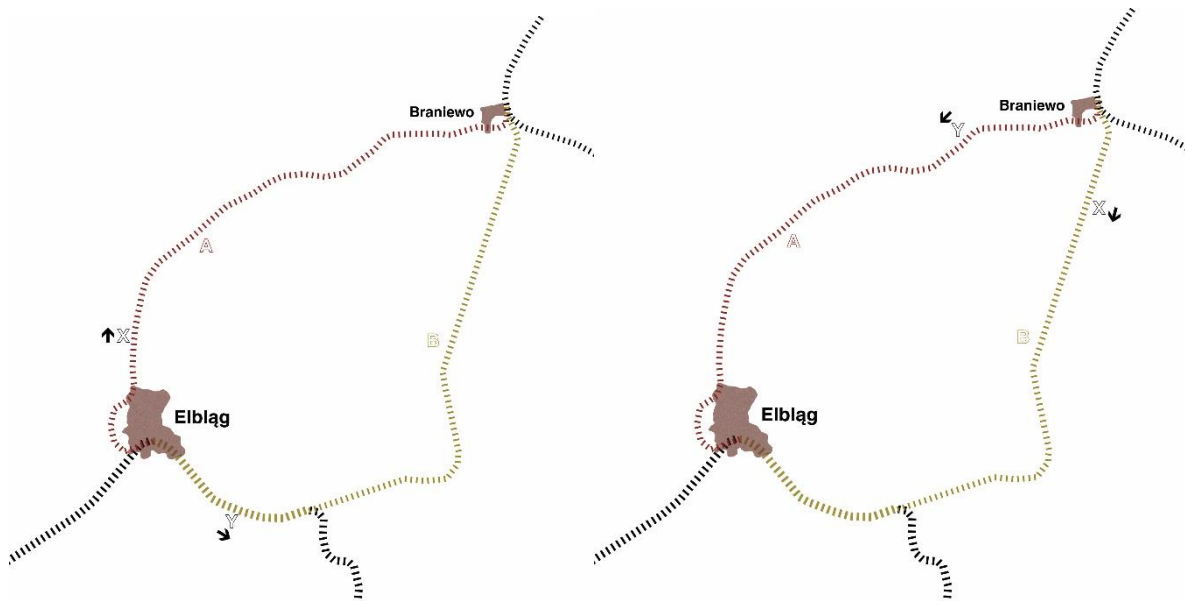


Figure 4. Railway line operating diagram. Source: own study

In the past, there were passing loops in several places that is, sections of the railroad that allow for overtaking and passing vehicles (e.g. Braniewo Wschodnie on section A, Stegny on section B). They were also provided for in the project- for a possible passing a freight or technical train, near the Elbląg Zawada, Kadyny and Frombork stations on section A and near the Stegny, Młynary and Chruściel stations on section B and moreover, the additional platforms at the Elbląg Główny and Braniewo stations. Within each stop and station, there will be bicycle and car parking lots in the Park & Ride system and in Elbląg and Braniewo, the connection of the railway system with the public transport system. In the case of stops located by the Vistula Lagoon, it is planned to return to the system in the RAIL + SHIP arrangement in which the train timetable would be coordinated with the cruises of ships departing from the Vistula Spit.

The scheme of using both lines as a single regional railway organism in the Elbląg Functional Area is presented in the elaboration *Koleje miejskie i regionalne w Polsce* by Maciej Kruszyna.

5.2.3 Models of railway stops

Three types of passenger stops have been designed on the reactivated route, they differ in size, depending on the needs of the city:

- Train stop- the smallest of the facilities, consisting of a train shelter with seats and a bicycle parking lot (with a car park in the area). It was located at the new passenger stops: Elbląg Żuławy, Elbląg Zawodzie and Kadyny Przystań as well as on the existing Elbląg Zdrój (formerly functioning as a railway station, but the building was sold to a private investor), Rubno Wielkie, Jagodno, Kamionek Wielki, Nadbrzeże, Święty Kamień, Stępień, Braniewo Brama, Komorowo Żuławskie, Bogaczewo, Stegny, Słobity, Kurowo Braniewskie, Chruściel and Bemowizna;
- Small train station- a medium-sized station building, consisting of a closed waiting room, ticket/information desk, toilet (adapted for disabled people) and a bicycle parking lot (with a car park in the area). It was located at the existing passenger stops Suchacz (budynek dawnego dworca pełni obecnie funkcje mieszkalne), Kadyny, Młynary;

- Large train station- the biggest of the facilities, consisting of a closed waiting room, ticket office/information desk, bar, toilet (adapted for disabled people) and a bicycle parking lot (with a car park in the area). It was located at the new Elbląg Zawada stop.

In addition, the project assumed the restoration of cash desks and adaptation of the building functions to the program of a *small station* at the existing station in Tolkmicko (a historic building from 1901; in 1995 it was entered in the register of monuments; currently, it is undergoing renovation of the facade) and adapting the building's functions to the program of a *large station* at the existing Frombork station (obiekt z początku lat 70. XX wieku).

Three train stop locations have been developed in detail: a *train stop* in Kamionek Wielki, a *train stop* Kadyny Przystań and a *small train station* Kadyny, and a *large train station* Elbląg Zawada.

5.2.4 Kamionek Wielki

Kamionek Wielki (ger. *Gross Steinort*) is a small town situated on the route of the Kolej Nadzalewowa, about 10 km from Elbląg. The history of the village dates back to 1315, when it was mentioned in the location privilege. Already at the turn of the 15th and 16th century, there was a large brickyard called Stara Szopa which produced brick for the needs of Elbląg however, it was burnt down during the attack of Gdańsk inhabitants in the 16th century. Soon after, it was rebuilt and operated for about 400 years until 1922 when it was torn down by the last owner. Fishing was developing in the village and before the World War II the marina in the port channel was used by the Elbląg yacht club.

In the village, a Dutch homestead with a five-column arcade dating back to 1772 (currently under reconstruction), characteristic of the region, has been preserved. Moreover, in the village there is a remnant of an Evangelical cemetery from the end of the 19th century. In the neighboring village, Nadbrzeże, there are the remains of two brickyards – Hopehill i Reimannsfelde in which the Stutthof sub-camp was established during World War II. In Kamionek Wielki itself there is a remnant of a residential camp for forced laborers the so-called *gemeinschaftslager* in which one half is currently functioning as a residential part, and the other as a Special Education Center. The south-eastern part of the village is adjacent to a vast beech and oak forest which is distinguished by the richness of post-erosive terrain forms, such as gorges and ravines.



Photo 22. arcaded house in Kamionek Wielki from 1772.
Source: www.portel.pl

The project involves the construction of a train stop with a car park, which would be connected to a nearby sailing marina where the boatswain's office and sanitary facilities are predicted. Moreover, a pedestrian and bicycle trail was marked out towards the forest with a place to rest by the arcaded house. There was also planned the construction of an observation point on the Vistula Lagoon from which it is possible to observe protected species of breeding birds such as white-tailed eagle, honey buzzard, sparrowhawk and lesser spotted eagle.

5.2.5 Kadyny

Kadyny (ger. *Kadinen/Cadinen*) is a village situated by the Vistula Lagoon, about 23 km from Elbląg in the area of the Landscape Park of Wysoczyzna Elbląska and the Kadyński Las Reserve. The town was founded by the Teutonic Order. It was established near the ruins of the conquered old Prussian

settlement of the Pomezan tribe. The first mention of the village comes from 1255. Kadyny was the seat of the bailiffs' office and later the forest district who was under the command of the Elbląg commander. There was a Teutonic manor farm and a hunting lodge. The defensive Teutonic court was built in the 13th century. In 1431, Jan Bażyński became the owner of Kadyny who received these goods in return for the order's debts, then Kadyny was sold several times. From 1817 its owner was the Elbląg merchant Daniel Birkner, and from 1827 his son Eduard Birkner. The last owner of the village bequeathed it in his will to Emperor Wilhelm II, who received it on



Photo 23. Tavern in Kadyny. Source: www.projekt-chemini.pl

December 15, 1898. The acquisition of Kadyny by the emperor resulted in great development of the village. The new owner ordered the property to be rebuilt and the construction of a new village according to the designs of Berlin architects in the so-called *ordenstil* (from German- monastic style). Large clay deposits contributed to the creation of a brickyard. In 1905, the *Majolika-Werkstatt Cadinen* factory specializing in the production of majolica for the court, was established by order of the emperor. It was also used to make ceramic ornaments on the Royal Route in Gdańsk, and the products of Kadyny were appreciated in the country and abroad. After the World War I, production was expanded and commercial in nature. In 1905, a railway station (now defunct) was built on the route of the Kolej Nadzalewowa, designed by a famous German architect, Fritz Klingholz. At the emperor's order, a port and a narrow-gauge railway track were built in the village, connecting the majolica manufacture and brickyard with the railway track of the Kolej Nadzalewowa. The factory ceased its activity at the end of World War II. Attempts to reactivate the plant after 1950 unfortunately ended in failure. The brickyard in Kadyny continued to operate for many years after the war.



Photo 24. von Schlieben Palace in Kadyny.
Source: www.polskiezabytki.pl

There is a palace and farm complex in the village, gradually expanded from the 17th to the 20th century. It consists of a baroque palace, stud farm buildings, a farm and a housing estate for agricultural workers. In the years 1901-1902, an iron porch on the south side and a link on the east side were added to the palace. After the war, a stud was established on the estate, which existed there for several dozen years. In the 90s, part of the complex was converted into a hotel. The buildings included in the structure of the village (with a few exceptions, such as the Evangelical church next to the cemetery, demolished in 1958) have been preserved.

There is also a Franciscan monastery complex from 1745–1799 in Kadyny which was built on the site of an old Prussian town of the Pomezan tribe. Rebuilt from the ruins in the early 1990s. It is currently located on the premises of Kadyński Las Nature Reserve. There is a natural and historical path which leads to the monastery. It starts at one of the oldest trees in Poland, the nature monument, the Jan Bażyński oak and runs next to the burial chapel of the Birkner family, one of the owners of the village. There are ancient beeches, ash trees and oaks on the path. During its last modernization, an observation tower was built in the vicinity of the monastery complex, from which the panorama of the Vistula Lagoon can be observed.

Moreover, in the village there is a complex called "Srebrna Riwiera" with a beach, a marina for small draft units, a tavern and a beach soccer field.

The project involves the construction of a new Kadyny Przystań *train stop* next to a former brickyard (at the site of the original train station) and a *small train station* in place of the existing Kadyny train stop. There will also be a passing loop at the *small train station*. In the vicinity of the stops, a construction of car parks for passenger cars and connecting the stations with the existing bicycle paths and pedestrian paths towards the marina, beach, historical village and the Kadyński Las Reserve are planned. The "Srebrna Riwiera" complex will be connected with the beach on the north side by creating a pedestrian and bicycle promenade. There was also established the construction of a new boatswain's office with sanitary facilities.

5.2.6 Elbląg Zawada

The location of the new station in Elbląg was established in the northern part of the city, near the Zawada (ger. *Pangritz Colonie*) estate which was attached to the city in 1913. The history of the Zawada estate begins in 1801 when Johann Gottfried Pangritz, an Elbląg merchant, bought a plot of land in this area on which he built a manor house. In the mid-nineteenth century, a lush development of industry and crafts began in Elbląg and many workers including townspeople who were unable to pay high rents in the city moved to the "colony". In 1927, an evangelical school of St. Paul (currently the Vocational School Complex No. 1) was built there. In the same year, the estate was connected with the city by tram line No. 2. In 1930, the colony was inhabited by about 6.5 thousand people. The district (unlike the New and Old Towns of Elbląg) was not destroyed during World War II. In 1951 it was renamed the Zawada estate. Its image began to change in 1975, when it was decided to build a large housing complex there. Many family houses and allotments were demolished at that time. Few of them have survived to this day.



Photo 25. Contemporary panorama of the Zawada estate. Source: www.info.elblag.pl

From the west, the district borders with Modrzewie Park, described in Chapter 4.3.4.

The project involves the construction of a new *large train station* on an unused area at Mazurska Street and development of the unused area behind the railway tracks on the side of the Elbląg river into a city park which would be an extension of the Modrzewie park towards the river.

On the north side, the design area borders on the industrial area, including the table and chair production hall of Halex Meble or the cold store of the Trans-Ser dairy company. At a distance of about 450 m from the design area, there is the Wójcik furniture factory employing about 1,500 people. On the eastern side, the design area borders on Masurska Street and the intersection with Aleja Odrodzenia leading to the Zawada estate. On the other side of the street there is a scrap yard and the seat of the cleaning company Cleaner, where the Consulate of the Republic of Moldova operates. To the south, the area borders on small production plants and the distribution center of Grupa Żywiec, the owner of the brewery in Elbląg. On the west side, the design area borders on the Elbląg River and a naturally formed peninsula. The south-eastern part borders on Modrzewie Park.



Photo 26. The building of the signal box in Elbląg Zdrój.
Source: own photo

The eastern part of the plot is occupied by the railway tracks of the closed railway line No. 254 (of Kolej Nadzalewowa) and a short open piece of a river flowing from the area of the heat and power plant, which then flows through the tunnel to the Elbląg River. Moreover, there is a control room on the plot from the turn of the 1970s and 1980s with an interesting industrial character and the adjacent unused administrative building. In addition, the area has a hardened surface here and there. The rest of it is occupied by a disordered greenery, consisting of various species of plants. White willow, black alder and elm dominate here. Due to the proximity of the Vistula Lagoon, the riverside part of the area is occupied by various species of birds,

characteristic of the floodplain area. Among others terns, cormorants, gray herons and marsh harriers can be seen here. The area is eagerly used by the inhabitants of the nearby Zawada- mainly the waterside part used by anglers and walkers.

According to the assumptions of the local development plan, this area is mostly intended for service development supporting the water front of the Elbląg River and only a small part of it for the sports and recreation area. The northern part, along the Babica River, has been designed for green areas and surface waters, serving as an ecological route. The area next to the railroad on the side of Mazurska Street has been planned for a petrol station and within the Babica River, on the north and south sides, areas of technical and production development with the admission of a service function. The area of the peninsula is designated for public greenery of ecological and recreational importance.



Photo 27. Nature of the project site - view on the Elbląg River.
Source: own photo

The project involves the connection of the existing Modrzewie Park with the planned area by running a footbridge. It starts in Modrzewie Park, which connects it with the new train station and the newly designed park. Every 50-100 meters, there are stairs leading to park paths and at the most important points there are lifts for the disabled people. The footbridge is therefore a way to cross the railway tracks and the nearby river without any collisions as well as a compositional element connecting both parks. The project assumes the separation of several functional zones within the design area:

1. Natural succession zone- with the least intervention in the north-west part of the project area. It was assumed that the existing aquatic vegetation would be left intact.
2. Residents activation zone- a zone consisting of a new administration and workshop building located on the site of the former administration building, building of the former control room transformed into workshop rooms for the residents of the nearby district and urban farming garden. The new administration and workshop building would consist of a section for railway employees (with an administrative section and a new control room) and a section for the residents of the estate also intended for workshop (greenery) rooms.
3. Recreation area- the waterside zone for the waterside recreation with a pier and a canoe warehouse where you can rent a canoe. Within the zone, there is also a vantage point from which the riverside panorama can be observed. It was assumed that the existing aquatic vegetation would be left intact.

4. Relaxation zone - a zone consisting of a bar, a summer cinema and a siding for a restaurant train car.
5. Fun zone - a zone consisting of playgrounds and a trolley track for children
6. Sports zone - a zone consisting of a football field, two courts, a beach volleyball court and an outdoor gym. The zone also includes changing rooms with rooms for coaches.
7. Railway station zone - a zone consisting of a large train station, a *Viennese* tram and bus stop and a Park & Ride car park.

5.2.7 Structural and architectural description

The designed objects are single-storey buildings based on a module with dimensions of 3x3x4 metres. The structure is supported on steel poles with a cross-section of 20 cm, filled with glued wood. The facades feature polycarbonate panels and gray corrugated fiber cement sheets. Each of the buildings will feature an extensive green roof and the installation of photovoltaic batteries on the roofs of railway stations and the administration and workshop building in Elbląg.

The buildings have been designed in such a way that they can be transported by rail on platform cars on special construction carts - type S for the transport of large loads, at least 3 metres wide.

The aforementioned footbridge was designed as a reinforced concrete footbridge with a box-section and a width of 3 meters. 20 meters was assumed as the maximum distance between two poles.

5.3 Summary

The project of restoring the Kolej Nadzalewowa in a wider context is a response to the search for alternative transport to the car. While other European countries plan to restore closed lines or try to expand the existing ones, more connections are still getting closed in Poland. In the local context, the project would be a response to the problem of the lost tourist potential of the floodplain areas as well as would solve the problem of hindered mobility between smaller towns in the region and Elbląg or Braniewo.

6. Bibliography

1. **The history of technology**, www.britannica.com (access: 03.02.2020)
2. **Odbudowa zlikwidowanych linii kolejowych: Historia, teraźniejszość, perspektywy**, Kaczorowski J., Misiaszek-Przybyszewski J., *Przestrzeń/Urbanistyka/Architektura*, 1/2018, s. 271–284.
3. **Księga Elbląska** praca zbiorowa pod redakcją Jerzego Zaskiewicza, Wydawnictwo Yama
4. **Historia Elbląga Tom IV (1918-1945)** Marek Andrzejewski, Jerzy Domino, Mieczysław Józefczyk
5. **PROPOSAL AND APPLICATION OF METHODOLOGY OF REVITALISATION OF REGIONAL RAILWAY TRACK IN SLOVAKIA AND SERBIA. PART 2: STATE OF REGIONAL TRANSPORT IN SLOVAKIA AND SERBIA**, Jaroslav MAŠEK, Martin KENDRA, Juraj ČAMAJ, Sanjin MILINKOVIĆ, Slavko VESKOVIĆ, *TRANSPORT PROBLEMS*, Volume 10 Issue 4, 2015
6. **WPLYW REWITALIZACJI PRZEWOZÓW NA LINII KOLEJOWEJ ULIKOWO–KALISZ POMORSKI –WAŁCZ (PIŁA GŁ.) NA WZROST KONKURENCJNOŚCI REGIONU I MOBILNOŚCI JEGO MIESZKAŃCÓW**, Arkadiusz Drewnowski, Krzysztof Małachowski, zeszyty naukowe uniwersytetu szczecińskiego, NR 871 problemy Transportu i logistyki nr 30
7. **Koleje miejskie i regionalne w Polsce**, Maciej Kruszyna, 2018, wydawnictwo Księży Młyn
8. **Revitalized railway facilities as tourism attractions**, Gardzińska A., 2018, *Prace Komisji Geografii Komunikacji PTG*, 22(3), 31-40.
9. **Strategia zrównoważonego transportu EOF**, 2015
10. **Raport o stanie Miasta Elbląga**, Marzec 2011
11. **Strategia Rozwoju Elbląga 2020+**
12. **STUDIUM UWARUNKOWAŃ I KIERUNKÓW ZAGOSPODAROWANIA PRZESTRZENNEGO GMINY – MIASTA ELBLĄG - synteza uwarunkowań**
13. **NADMORSKA KOLEJ WĄSKOTOROWA JAKO ATRAKCJA TURYSTYCZNA GMINY REWAL**, Martyna Biernacka, „Warsztaty z Geografii Turyzmu” 1(8), 2017
14. **Revitalization of the Narrow-Gauge Żuławy Commuter Railway and its effect on shipping conditions in the Vistula delta**, Patrycja Jerzyło, Aleksandra Wawrzyńska, Adam Bolt, Gdańsk University of Technology, Faculty of Civil and Environmental Engineering, Poland
15. **FORGOTTEN RAILWAYS. RESTRUCTURING AND REINVENTION AS TOOLS OF LEISURE AND TOURIST REVITALIZATION: THE BAEZA – UTIEL RAILWAY IN THE PROVINCE OF ALBACETE**, Francisco Cebrián Abellán, Universidad de Castilla-La Mancha
16. **Nadal nie będzie pociągów do Kaliningradu** <https://www.rynek-kolejowy.pl/mobile/nadal-nie-bedzie-pociagow-do-kaliningradu-89550.html> (access: 24.03.2020)
17. **Koleje miejskie i regionalne w Polsce**, Maciej Kruszyna, Księży Młyn Dom Wydawniczy (access: 04.05.2020)
18. **Cegielnie**, www.historia-wyzyna-elblaska.pl (access: 12.05.2020)
19. **Spacerem po Parku Krajobrazowym Wysoczyzny Elbląskiej**, www.portel.pl (access: 25.05.2020)
20. **Kamionek Wielki**, historia-wyzyna-elblaska.pl (access: 25.05.2020)
21. **Kadyny**, historia-wyzyna-elblaska.pl (access: 27.05.2020)
22. **217 Bogaczewo – Braniewo**, www.atlaskolejowy.net (access: 01.06.2020)
23. **254 Tropy - Braniewo**, www.atlaskolejowy.net (access: 23.05.2020)
24. **Elbląg Zdrój**, semaforek.kolej.org.pl (access: 12.06.2020)

7. Illustrative annexes