

Summary of the Environmental Impact Assessment Report
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"



"This project contributes to reducing social and economic disparities between citizens of the European Union"

The ordering party



PKP POLISH RAILWAY LINES S.A.
U.S.A. Trade fair 74
03-734 Warsaw

Contractor — Consortium Leader



Egis Poland Sp. z o.o.
U.S.A. Domaniewska 39A, 02-672 Warsaw
It's Tel. (22) 20 30 100, fax (22) 20 30 101
e-mail: biuro@egis-poland.com

Contractor — Consortium Partner



Wyg International Sp. z o.o.
U.S.A. The Battle of Warsaw 1920 7, 02-366 Warsaw
It's Tel. (22) 492 71 00, fax (22) 492 71 13
e-mail: warszawa@wyginternational.pl

Name of the project:

"Work on an alternative transport route Bydgoszcz — Tri-City, stage I"

Title of study:

Report on the impact of the project on the environment — Summary

Area of study:

Railway line No. 201 on the section from km 136 + 096 to km 205 + 200
Railway line No. 214 from km — 0.229 to km 8+ 150
Railway line 229 from km 31+ 000 to km 42 + 100
together with newly designed connectors

Industry:

ENVIRONMENT

Date:

20.08.2018 r.

Version No. of the study:

Revision of 01



Maciej Kaczmarek

Patrycja Antoszczyszyn-szpicka

By Karolina Zalewska

Anna Bytom

Marta Lorenc

Beata Kniec

Paulina Cudak

Kacper Tondera

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

The Contractor

Consortium of companies:

Egis Poland Sp. z o.o.
U.S.A. Domaniewska 39A,
02-672 Warsaw.

Wyg International. Sp. z o.o.
U.S.A. The Battle of Warsaw 1920. 7
02-366 Warsaw

Authors of the study

Maciej Kaczmarek

**Project Director, head of the team (has
powers in accordance with Article 74a(2) of
the EIA Act)**

Patrycja Antoszczyszyn-szpicka

By Karolina Zalewska

Anna Bytom

Beata Kniec

Marta Lorenc

Paulina Cudak

Kacper Tondera

Claudia Wala

Table of contents

1. WSTĘP	5
2. OPIS PLANOWANEGO PRZEDSIĘWZIĘCIA.....	5
3. ŚRODOWISKA I UŻYTKOWANIA TERENU W OTOCZENIU PLANOWANEGO PRZEDSIĘWZIĘCIA.....	7
4. OPIS PRZEWDZIANYCH SKUTKÓW DLA ŚRODOWISKA W PRZYPADKU NIEPODEJMOWANIA PRZEDSIĘWZIĘCIA.....	12
5. ODDZIAŁYWANIE NA ŚRODOWISKO PLANOWANEGO PRZEDSIĘWZIĘCIA.....	13
5.1. Etap realizacji/likwidacji	13
5.2. Etap eksploatacji.....	18
6. ZAGADNIENIA KLIMATYCZNE	22
7. ODDZIAŁYWANIE NA BIORÓŻNORODNOŚĆ	22
8. WYKAZ DZIAŁAŃ MINIMALIZUJĄCYCH ODDZIAŁYWANIE NA ETAPIE REALIZACJI, LIKWIDACJI I EKSPLOATACJI.....	22
9. POWAŻNE AWARIE, KATASTROFY NATURALNE I BUDOWLANE	26
10. MOŻLIWE TRANSGRANICZNE ODDZIAŁYWANIE NA ŚRODOWISKO	28
11. ANALIZA MOŻLIWOŚCI WYSTĄPIENIA KONFLIKTÓW SPOŁECZNYCH.....	28
12. ANALIZA PORÓWNAWCZA ZE WSKAZANIEM WARIANTÓW AKCEPTOWALNYCH DLA ŚRODOWISKA	29
13. ODDZIAŁYWANIE SKUMULOWANE	29
14. PROPOZYCJA MONITORINGU ODDZIAŁYWANIA PLANOWANEGO PRZEDSIĘWZIĘCIA	30
15. OKREŚLENIE KONIECZNOŚCI USTANOWIENIA OBSZARU OGRANICZONEGO UŻYTKOWANIA ..	30
16. OPIS TRUDNOŚCI WYNIKAJĄCYCH Z NIEDOSTATKÓW TECHNIKI	31

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

1. INTRODUCTORY

The subject of this study is a report on the impact of the project on the environment for the Investment: "**Work on an alternative transport route Bydgoszcz — Tri-City, stage I**".

The project has been qualified for **projects likely to have a significant impact on the environment**. The legal basis for this qualification is **§ 3 par. 2 point 1, in conjunction with § 2 para. 1 point 29 of the** Regulation of the Council of Ministers of 9 November 2010 on projects likely to have significant effects on the environment (consolidated text Journal of Laws 2017, 1405, as amended) — railway lines forming part of the trans-European rail system within the meaning of the Rail Transport Act of 28 March 2003 (Journal of Laws 2017, item. 2117 as amended).

The applicant for a decision on environmental conditions is PKP Polskie Linie Kolejowe S.A.

As the project is located in the Pomeranian Voivodeship, the competent authority to issue a decision on environmental conditions is the **Regional Director for Environmental Protection in Gdańsk**.

2. DESCRIPTION OF THE PLANNED PROJECT

The planned investment is located in the Pomeranian Voivodeship.

Railway line No 201 on the section in question runs through the following localities: Kościerzyna, Skorzewo, Kashubian Gołubie, Little Krzeszna, Stara Krzeszna, Szymbark, Kolano, Wieżyca, Dębowo, Sławki, Somonino, Kiełpino, Rutki, Glinicz, Borkowo, Żukowo, Pębiechowo, Rębiechowo, BARNIEWICE, Nowy Świat, Gdańsk, Gdynia.

The other railway lines analysed connect line No. 201 with the town of Kartuzy (via Leszno Kartuskie and Dzierżążno).

The planned link between line 214 and line 229 is located within the municipality of Kartuzy, to the east of the town of Kartuzy. The planned link between line 201 and line 229 is located in the municipality of Żukowo, south of Borkowo.

The closest surroundings of the analysed line are very diverse and are characterised by the occurrence of various forms of land development. The dominant type of development is the so-called natural-cultural type.

The main scope of work under the investment option, including:

- reconstruction and modernisation of railway line No. 201 on the Kościerzyna — Gdańsk Osowa section — the addition of the second track of the railway line together with the adaptation of the technical infrastructure to the speed of $V_{max} = 140$ km/h.
- reconstruction and modernisation of railway line No. 201 on the Gdańsk Osowa — Gdynia Główna section with the addition of a third track, on the section from about 187+ 000 to km 205+ 200, with the adaptation of the technical infrastructure to the speed of $V_{max}=100$ km/h.
- construction of two turnout connections between railway line No. 201 and railway line No. 202 — approx. km 202 + 800, correction of tracks of railway line No 202 on the 1 km section.
- electrification of the entire modernised section of the railway line No. 201, No. 214 and 229 with newly designed links,
- construction of a non-tractional need line on the modernised section of the railway line No. 201, 214 and 229 — reducing the risk of power outages,
- reconstruction and modernisation of the station on the line 201 — Kościerzyna, Gołubie Kashubian, Somonino, Żukowo East — demolition and construction of a new track system of the station together with the necessary railway infrastructure.
- reconstruction and modernisation of the station on the line 201 — Gdańsk Osowa and Gdynia Grand Kack to the extent necessary, resulting from the construction of the third track.

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

- reconstruction and modernisation of line 214 with the adaptation of the technical infrastructure to the speed $V_{max}=120$ km/h demolition and construction of a new track system of the station together with the necessary railway infrastructure,
- construction of a new section of line No. 214 as a link to line No. 229, enabling the Somonino-Kartuzy-Glincz train to pass without changing direction — with the adaptation of the technical infrastructure to the speed $V_{max}=100$ km/h,
- reconstruction and modernisation of Kartuzy station — demolition and construction of a new track system of the station together with the necessary railway infrastructure,
- adapting the technical infrastructure of line No. 229 to speed $V_{max}=100$ km/h.
- construction of a new section of line No. 201 with line No. 229 in the area of Podg Glincz, enabling a collision-free and directional connection of these lines — with the adaptation of the technical infrastructure to the speed of $V_{max}=100$ km/h,
- the building of the Timber Wierząż was in the place of the existing passenger stop Dzierżąno along with the reconstruction of the existing platform.
- construction of new passenger stops on line 201,
- construction of new control rooms and LCS Kościerzyna building,
- carrying out a comprehensive reconstruction of the existing drainage and construction of a new one in places where it is necessary,
- the decommissioning and reconstruction of existing platforms, including correction of the position of platform edges and the construction of new platforms with entrances and associated infrastructure, including persons with reduced mobility,
- demolition of unnecessary infrastructure,
- reconstruction of railway and road crossings along with sections of access roads,
- elimination of rail and road crossings and construction of parallel roads,
- elimination of rail and road crossings and construction of two-level crossings,
- reconstruction of roads in the area of existing and designed two-level crossings,
- construction of parking spaces and access roads in the area of railway control and buildings and facilities for conducting and servicing railway traffic,
- construction and reconstruction of parking spaces, including for persons with reduced mobility, in the area of platforms with commuting,
- construction of public hold yards in the area of railway stations along with commuting,
- reconstruction of existing parallel roads on collision sections with the designed track system,
- construction, reconstruction of pavements, pedestrian and bicycle paths on road sections within railway and road crossings, two-level crossings, rebuilt public roads and in the area of platforms and passenger service places,
- renovation/construction/deconstruction of engineering facilities,
- construction of fiber optic and copper cable lines,
- reconstruction and construction of TVU equipment at railway crossings, for monitoring railway facilities and areas,
- installation of modern equipment srk at traffic stations and in the buildings of the control room/container,
- reconstruction and installation of automatic linear locking devices,
- modernisation of the lighting of platforms and switches at stations and passenger stops,
- remodeling of electric switches heating.
- reconstruction of existing or demolition and construction of new or construction in new locations of engineering facilities (railways, road overpasses, railway bridges and culverts).
- the decommissioning and reconstruction of existing platforms, including correction of the position of platform edges and the construction of new platforms with entrances and associated infrastructure, including persons with reduced mobility.

3. ENVIRONMENT AND LAND USE IN THE CONTEXT OF THE PLANNED PROJECT

Geographical location, land morphology and landscape

Geographical location, land morphology and landscape due to the description and analysis of the sites adjacent to the investment are the same for both variants (W1 and W2).

According to the physico-geographical division of Poland according to Kondracki, the investment area is located within the limits of the following units:

- province Than Central European
 - subprovince The South Baltic Coast,
 - macroregion Pobrzeże Gdańskie,
 - mesoregion The Kashubian Coast
 - subprovince The South Baltic Lake District,
 - macroregion East Pomeranian Lake District,
 - mesoregion Kashubian Lake District
 - subprovince The South Baltic Lake District,
 - macroregion South Pomeranian Lake District,
 - mesoregion Bory Tucholskie

The shape of the area in question is characterised by a large geomorphological diversity. It is a lowland area, shaped by the glacial processes of the Pleistocene period and the glacial phenomena occurring during the Holocene period.

The largest section of the investment is located within the Kashubian Lake District, characterised by hill sculpture. It is an area where there are a large number of lakes constituting the tourist and landscape attractiveness of this part of the voivodeship. A characteristic feature of this mesoregion are primarily: moraine corrugated and hilly plains with varying intensity of sculpture and variable hydrographic characteristics with numerous lake reservoirs and swamps, with predominant agricultural use, slopes of the frontal moraine zone with varying, sometimes significant slopes of the terrain and different coverage of the ground surface (a mosaic of agricultural and forest areas) and hilly moraine strings of live and varied sculpture, largely covered with forests.

Geological conditions

In terms of tectonic-structural terms, the area (in variants W1 and W2) is located within the Baltic Syneclysis. It is a depressive structure where strongly disturbed paleozoic compositions and a falsified mesozoic cover lie directly on the crystal core. The substrate for quaternary sediments in most of the area is Neogenean, and in places palaeogenic muds, quartz sands and quartz-glaucinite sands. Quaternary sediments remain on the entire surface of the test site and their density is variable.

Soils

In the area of the analysed railway lines (buffer 2x100m from the axis of the line), variants W1 and W2 mainly contain lignite leached and brown sour soils, which account for more than 80 % of the total analysed area.

Climatic conditions and atmospheric air condition

The analysed railway lines together with the links are located in the Pomeranian zone, only a small part of LK 201 is located within the limits of the Tri-City zone.

By letter WM.7016.1.141.2018.BK of 23.5.2018, the current state of atmospheric pollution in the area of the investment in question was determined. The state of air quality in this area according to the above-mentioned letter is at the following level:

It's a tab.1 Limit values and current air quality status (background).

L.P.	The Substance	Reference values averaged to one hour D ₁ [µg/m ³]	Reference values averaged to the period of the calendar year D _a [µg/m ³]	R [µg/m ³] — background (current air quality status)
1	Sulfur dioxide*	350	20	10,0
2	Nitrogen dioxide	200	40	30,0
3	Particulate matter PM10	280	40	30,0
4	Particulate matter PM2.5	—	25/20	20,0
5	Benzene	30	5	3,0
6	Carbon monoxide	30 000	—	500,0
7	Lead	5	0,5	0,1

Source: Source: Own elaboration on the basis of a letter from the WIOŚ and the Regulation of the Minister of the Environment on levels of certain substances in the air and on the reference values for certain substances in the air.

According to the above table, in the area of implementation of the investment there are no exceedances of the permissible average annual background quality concentrations for individual substances.

The investment under analysis is located in the area between the marine and continental climate, with a strong climate impact of the Baltic Sea and a strong impact of air masses from the Atlantic. The influence of the Baltic Sea itself, which is a relatively small basin, is noticeable in a narrow coastal zone — it reaches inland only about 30 km from the coastline. On the other hand, the overlapping influences of the Atlantic Ocean and the Baltic Sea cause that the entire area of the voivodship is characterised by milder winters and slightly cooler than inland summers and low annual temperature amplitudes. The period of severe storm events lasts from September to March. In Pomerania there is one of the lowest pressure values in Poland. An important meteorological element occurring in Pomerania is also the amount of precipitation. They are characterised by high temporal and spatial variability in the voivodeship. Intensive and long-lasting rainfall usually occurs in the area of the Gulf of Gdańsk and the Vistula Lagoon.

Acoustic climate

The results of the recognition of environmental conditions, including the list of areas subject to acoustic protection with the source of the classification and the distance from the axis of the nearest track located within a distance of up to 20 m, in the range from 20 to 50 m and in the range from 50 to 300 m from the nearest track are included in text annex no. 3.13-1 Areas subject to acoustic protection as an annex to the EIA report.

Groundwater and surface water

Railway line No 201 crosses 8 watercourses constituting 7 surface water bodies (Bibrowa, Rakownica, Radunia, Mała Słupia, Strzelanka, Influence from Wysocki, Tributary of Wielki Kacka, Duck), railway line No. 214 crosses one such river (Radunia), while the other lines do not cross the rivers which constitute jcwp.

The area of the investment in question is located within the limits of eight catchment areas of the JCWP: Wdzydze (RW200025294379), Radunia from the outflow from Ostrzycki to Strzelenka (RW20001948683), Mała Słupina with lakes Sitno, Monastery Large, White (RW200017486829), Strzelenka with Lake Tuchomski (RW200017486849), Duck (RW20001747989), Tributary from the Hands (RW2000174868178). The update for the JCWP through the catchment areas of the analysed railway lines set the following environmental objectives:

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

- for 5 JCWP, the objective is to achieve good ecological status/potential and to achieve good chemical status,
- for 3 JCWP, the objective was to maintain good ecological status/potential and to achieve good chemical status.

4 lakes constituting surface water bodies have been identified in the area: Ostrzyckie, Patulskie, Dąbrowskie, Jez. Wierzysko. The distance from the axis of railway line No 201 to the nearest lake (Ostrzyckie) is approximately 33 m. It is expected that this distance should be sufficient to ensure that the implementation of the investment does not adversely affect the quality and quantitative status of the lake's waters. In the buffer 500 of the railway lines concerned, 10 lakes not constituting the JCWP and several dozen small water reservoirs were still found. The JCWP's assessment of the risk of non-achievement of the environmental objectives by the JCWP showed that 4 JCWPs are at risk of not meeting the environmental objectives. They were therefore covered by the derogation resulting from points 4(4)-1 of the WFD and extended the deadline for achieving the environmental targets until 2021.

This investment cuts through 1 area at risk of flooding located in the Żukowo commune in the area of the intersection by LK 201 of the Mała Słupina river (from approx. 177.265 km to approx. 177,275)

The area covered by the study is located within two Uniform Parts of Underground Waters: PLGW200013 and PLGW200028. They are characterised by good quality and quantitative status and are not at risk of not meeting the environmental objectives set in the APGW.

All the railway lines concerned are located within the limits of the quaternary main groundwater reservoir GZWP111 Subnieck Gdańska.

In the buffer 500 meters from the analysed railway lines there are 28 active wells classified as groundwater intakes and 2 wells decommissioned. Railway line No 201 crosses 4 zones of indirect protection of groundwater intakes, other railway lines and linkages do not cross the protection zones of groundwater intakes.

Railway line 201 in one place crosses the indirect protection zone of the surface water intake.

Areas and facilities protected under the Nature Conservation Act

The planned investment cuts through areas of natural value, including areas that are forms of nature conservation in accordance with Art. 1 of the Act of 16 April 2004 on nature conservation (Journal of Laws 2018 item. 142 as amended). Potential impact of the investment on large-scale forms of nature protection: landscape parks, protected landscape areas, Natura 2000 sites and nature reserves were analysed in a buffer up to 2 km from the axis of the extreme track. At a distance of up to 2 km from the analysed sections LK 201, 214, 229 and two planned for the construction of the links, no national parks or their otulins were identified, but in the above distance two landscape parks (Kaszubski Landscape Park, Tri-City Landscape Park), 9 nature reserves: Jar Rivers Raduni, Kacze Łęgi, Ostrzycki Forest, Peak Tower in Kashubian Lake District, Stare Modrzewie, Kępa Redłowska, Strzelnica, Łęg nad Swelina and Zamkowa Góra, including two of them: The Łęgi duck and the Raduni River Jar are directly adjacent to the course of line 201, two areas of protected landscape: Raduni Valley Protected Landscape Area and Kartuski Protected Landscape Area and 6 Natura 2000 sites: Area of Special Protection of Birds of the Bay of Pucka — PLB220005, Special Area of Protection of Siedlisk Leniec nad Wierzyca — PLH220073, Special Protection Area for Siedlisk Urocia Pojezierza Kaszubskiego — PLH220095, Special Protection Area of Siedlisk Jar Raduni — PLH220011, Special Area for the Protection of Siedlisk Klify and Stone Reef Orłowa — PLH220105 and Special Area of Protection of Siedlisk Prokowo — PLH220080.

Smaller forms of nature conservation, i.e. natural and landscape complexes, were analysed in a buffer up to 500 m from the axis of the extreme track, while the existing nature monuments at a distance of up to 200 m from the axis of the extreme track. In the buffer 500 m from the railway lines No. 201, 214 and 229 and the links there is one natural and landscape complex Rynna Dąbrowsko-Ostrzycka. The planned investment does not cross any ecological use. A small area covered by this

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

form of nature protection, Lake Kackie, is located within 500 m from the analysed lines. In the area of the investment there are no protected objects in the form of a natural monument, while within 200 m from the analysed railway line there are 25 natural monuments in both variants.

Protected natural habitats and protected fauna and flora species

For the purposes of this documentation, a natural inventory was carried out between August 2016 and 30 April 2017 in a buffer up to 150 m on each side of the railway line in question. Field work was carried out during the full period of plant vegetation, breeding and wintering of fauna, as well as during seasonal migration and dispersion of animals. On the basis of the above, the state of the natural environment on the inventory sections of the investment was characterised and the existence of migration corridors and animal movement paths on the route of the planned railway line was verified.

The following railway lines with a 150 m buffer were covered by natural research:

- No. 201 — km 136+ 096 to 205+ 200
- no 214 — km -0 + 229 to 8 + 150
- No. 229 — km 31+ 000 to 42 + 100
- connection — km 8+ 150-11+ 400.

On the basis of a natural inventory carried out in a buffer of 150 m from the axis of the designed track of the analysed railway lines, a total of 13 natural habitat types listed in Annex I of Council Directive 92/43/EEC of the day. 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive), including 12 habitats compliant with the Gdańsk RDOŚ data and 1 new habitat with code 7110:

- 3150 — Old river basins and natural eutrophic reservoirs with collections from Nymphaeion, Potamion,
- *6230 — Low Twin Turf (Nardion),
- 6410 — Variable moist meadows (Molinion),
- 6430 — Mountain herbal (Adenostyilion alliariae and herbal riverside Convolvuletalia sepium),
- 6510 — Low and mountain fresh meadows used extensively (Arrhenatherion elatioris),
- *7110 — High torches with peat-forming vegetation (live),
- 7140 — Transition and scrapland (mostly with vegetation z (Scheuchzerio-Caricetea),
- 7230 — Mountain and lowland base peatlands of the character of hammers, sedges and mechovets,
- 9110 — Acid beech (Luzulo-Fagion),
- 9130 — fertile beech (Dentario glandulosae-Fagion, Galio odorati-Fagion),
- 9160 — The Sub-Atlantic Circle (Stellario-Carpinetum),
- *91E0 — Willow, poplar, alder and ash (Salicetum or-fragilis, Populetum albae, Alnenion glutinoso-incanae, spring olives),
- 91F0 — deep oak-associated ash forests (Querco-Ulmetum).

As a result of the inventory, there were 3 plant species covered by partial protection in the area covered by the survey in accordance with the Regulation of the Minister of the Environment of 9 October 2014 on the protection of plant species (Journal of Laws 2014 item. 1409) Ordinary swamp *Ledum palustre*, sand blankets *Helichrysum arearium* and laurel wolves *Daphne mezereum*. As a result of the inventory, there were also 6 species of partial protection in the area covered by the study: shiny grove *Hylocomium splendens*, wetlands sharpened *Calliergonella cuspidata*, common armrest *Pleurozium schreberi*, thin flame *Polytrichum strictum*, Maggelian peat *Sphagnum magellanicum* and narrow-leaved peat *Sphagnum angustifolium*.

A total of 14 species of macroscopic fungi of natural value were found, including one species of phaginea conservation, *Inonotus triqueter* pine flippers, *Lentinus strigosus* bristles and *Lepiota alba* white spouts, and R (6 species — *exidia truncata* shingles, *Gloeoporus taxicola* wine-rear adhesive, spruce glue *Gomphidius glutinosus*, saffron mushroom *Mycena crocata*, forest reef *Serpula himantioides* and goose pigeon *Tricholoma columbetta*). strict — zoned earrings *Hydnellum concrescens* and 13 endangered species, classified as: E (2 species — orange peppermint *Cantharellus*

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

friesii and spinach *Hydnellum concrescens*), V (5 species — venomous flyomor *Amanita virosa*, workquake jelly *Ascotremella*)

On the basis of the natural inventory, a total of 14 lichen species were found, including 3 species under strict protection: Italian thin *Bryoria capillaris*, bright gold *chrysothrix candelaris* and salad parb *Peltigera hymenina* and 8 under partial protection: Icelandic pulveriser *Cetraria islandica*, *Cladonia arbuscula forest worker*, reindeer clad *Cladonia rangiferina*, tubular void Hypogymnia *tubulosa*, gold adhesive *Melanelixia subaurifera*, Wabnica *kielichowata Pleurosticta acetabulum* & flourish *ramalina farinacea* and tuft beard *Usnea hirta*.

The presence of 20 invertebrate species, protected under national law, has also been demonstrated. Regulation of the Minister of the Environment of 16 December 2016 on animal species protection (Journal of Laws 2016 item. 2183), including partial protection of 15 species: rejoicing great *Anodonta cygnaea*, snail of vineyards *Helix pomatia*, bumblebee *Bombus lapidarius*, bumblebee *Bombus terrestris*, bumblebee *Bombus lucorum*, bumblebee *Bombus pasucorum*, bumblebee *Bombus ruderarius*, bumblebees *Bombus ruderatus*, bumblebee *Bombus pratorum*, bumblebee *Bombus hortorum*, red bumblebee *Bombus Sylvorum*, bumblebee *Bombus muscorum*, red forest ants: red ants *Formica rufa* and moth ants *Formica polyctena* and leather runner *Carabus coriaceus* and total protection of 2 species: coarse scooter *Unio crassus* and *Lycaena dispar red mud*.

As a result of the electrofishing carried out and as a result of obtaining information from legal water users, the presence of 7 species, including 5 taxa listed in the Annexes to the Habitats Directive (Council Directive 92/43/EEC), was found, i.e.: brook, goat (=common goat), whitefin head, chick and rosary. These taxa are also subject to partial protection, pursuant to the Regulation of the Minister of the Environment of 16 December 2016 on animal species protection. In addition, the presence of limestone (species listed in the Habitats Directive and having a protective dimension and period in Polish legislation) and slippery (=slipper) (species subject to partial protection, listed in the Regulation of the Minister of the Environment of 16 December 2016) was demonstrated.

As part of the inventory of amphibians throughout the study area, five species were identified: grey toad (*Bufo bufo*), grass frog (*Rana temporaria*), urea frog (*Rana arvalis*), grass comb (*Pelobates fuscus*), truss (*triturus vulgaris*) and one group of species: frogs from the group of greens (*Pelophylax esculenta complex*). The inventory of the test site showed the presence of 2 reptile species: grape lizards (*Lacerta agilis*) and live lizard (*Zootoca vivipara*). In total, 31 sites were recorded — mainly within well sunny grasslands growing railway embankments and on the edge of forest complexes. The vine lizard was observed at 28 stations and the live lizard was observed at 3 stations.

The inventory work along the test line showed the presence of 76 bird species, including: 65 species under strict protection, 6 partially protected species and 5 wild game species. There are 6 species listed in Annex I to the Birds Directive. No species were found in the Polish Red Book of Animals. The number of species found does not include a complete avifauna inhabiting or using the surroundings of the railway line. Studies conducted in March and April did not cover breeding species late returning from winters. This applies to a number of common species, but also to key species that are likely to nest or nest in the inventory area (e.g.: *Sterna* sp. i *Chlidonias* sp., rug, doll, cherry, small flyer, gooseberry, ortholan).

In the area of the planned project, on the basis of a natural inventory of a distance equal to or less than 15 m from the extreme track, 7 species of bats were found, i.e.: Borowiec the great *Nyctalus noctula*, the brown gacek *Plecotus auritus*, the late dark *Eptesicus serotinus*, the larger dwarf *Pipistrellus nathusii*, the small dwarf *Pipistrellus pipistrellus*, the night of Natterera *Myotis nattereri*, the night of the ore *Myotis daubentonii* and one group of species of the genus *Myotis* sp. All identified species are under strict legal protection.

The inventory of the entire test area on railway lines showed the presence of 19 mammalian species, of which 7 are partially protected and 2 listed in Annexes II and IV of the Habitats Directive. The most common species of semi-forest mosaic such as *Capreolus capreolus* deer, *Cervus elaphus* deer, wild *Sus scrofa* and *Vulpes vulpes* foxes have been found. Ungulates achieve high density and are found throughout the research area, excluding compact buildings. During the tracking, the presence of two protected species of water and land mammals — *Lutra lutra* ottersand *Castor fiber*

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

beaver. Their presence was found on the basis of traces of bites (beavers) and traces, faeces (outlets). Both species inhabit territories that go well beyond the monitored areas.

As a result of the natural inventory carried out and data from the Gdańsk RDOŚ in a buffer of 150 m from the extreme axis of the railway track 201, 214, 229 and two links, 13 Natura 2000 natural habitat types (including 3 priority ones), 3 vascular plant species and 6 species of moss under partial protection were found. Among the habitats identified, the following should be considered as most sensitive to the impact of construction works: peat bogs (7110, 7140, 7230), ripples (91E0, 91F0) and old river basins and natural water reservoirs (3150), acidic and fertile beech (9110, 9130) and sub-Atlantic grotto (9160). In the planned area of the investment, 13 species of macroscopic fungi and 14 lichen species were also identified.

The identified fauna in the investment area includes 20 species of invertebrates, including 18 species protected, 7 species of fish and mines, including 5 taxa listed in the Annexes to the Habitats Directive, 5 species of amphibians and one group of species, 2 species of reptiles, 76 bird species, including 65 species under strict protection, 6 species of partial protection, 6 species listed in Annex I of the Birds Directive and 5 wild game species, 8 species of bats and 19 mammalian species, of which 7 are subject to partial species protection and 2 listed in Annexes II and IV of the Habitats Directive.

Areas and facilities protected under the Act on the Protection of Monuments

Detailed analysis covered the area in the belt about 200 m from the axis of the planned investment. The information obtained shows that in the area of the planned investment, historic buildings entered in the register of monuments, archaeological sites and architectural immovable monuments appearing in the municipal register of monuments are located.

In the buffer 200 meters from the axis of the railway lines there are 17 monuments entered in the Register of Monuments, including 13 point objects and 4 protected areas.

The nearest points are: The team of the railway station in Kościerzyn, the steam engine complex in Kościerzyn and the Gdynia railway station complex located about 10 meters from the axis of the railway lines. Other monuments are located 30-250 meters away.

The railway line No. 201 runs through the urban complex of the city Kościerzyna, the rural layout of the former monastery village in Żuków and the historical urban layout of Śródmieście Gdynia. Railway line No. 214 runs through the area of the urban complex of the city of Kartuszy.

In the buffer 200 meters from the axis of the railway lines there are 64 monuments entered in the municipal register of monuments. In the collision with the analysed railway lines, only those monuments (protected in the register of monuments) which form part of these lines — bridge objects, culverts and cubature buildings related to the need for traffic management on the line remain.

In the buffer 200 meters from the axis of the railway lines, 51 area archaeological sites and 17 points were registered.

Protected areas under the Healthcare Act

Within the scope and scope of the investment, there are no spas or spa protection areas defined on the basis of the Act of 28 July 2005 on health resorts, spas and spa protection areas and spa municipalities (consolidated text: Journal of Laws 2017, item. 1056).

4. DESCRIPTION OF THE ENVIRONMENTAL EFFECTS ENVISAGED IN THE ABSENCE OF A PROJECT

The solution consisting of not undertaking the project is a solution in which the investment in question is not implemented, the current road and railway system operates, and the financial outlays

amount only to the current maintenance of the railway, without the funds intended to increase technical parameters.

5. ENVIRONMENTAL IMPACT OF THE PLANNED PROJECT

5.1. Stage of implementation/decommissioning

Impact on the ground-water environment, including on water bodies

During the implementation/decommissioning phase of the investment, both in the investment option (W1) and in the alternative option (W2), the construction works carried out may contribute to: potential contamination of the ground-water environment which may occur as a result of flushing hazardous substances from improperly stored waste, improper organisation of the building facilities or direct leakage into surface waters; short-term and local disturbance of water flow and water silhouette as a result of works carried out within the riverbed. The implementation of the investment will periodically and in the short term affect the aquatic environment — after completion of the works, this impact will cease.

The planned project will not adversely affect the quality of groundwater and surface water bodies intended for the abstraction of water for the purpose of supplying the population with water intended for consumption located in the area of the investment. The project will not adversely affect the maintenance of the constant quality of the physicochemical indicators of the waters intended for consumption and will not result in the need to modify the water treatment processes. The planned project will not contribute to the failure to achieve the environmental objectives of the JCWP and the JCWPd intended to abstract water for the purpose of supplying the public with water intended for consumption, for which the objective of protection is to prevent deterioration of the quality of these water bodies in such a way as, in particular, to minimise the need for their treatment.

Effects on atmospheric air

In the event of implementation and possible liquidation of the analysed project, there will be emissions of substances into the air. However, this impact will be local and periodic. In order to minimise negative impacts, it is necessary to:

- store bulk materials under cover,
- transport bulk materials under tarpaulins,
- use wheel washers when leaving the construction site.

Analysing the impact of the investment on the climate, it was considered that according to the results of the conducted analyses it is concluded that the planned route will not generate significant effects on climate conditions.

Impact on acoustic climate

At the stage of construction and possible decommissioning, machinery and equipment used during construction will be the source of noise emitted to the environment. This impact will be short-lived and moving along with the front of the works. Due to the type of work carried out, the use of heavy machinery is necessary. Reducing the nuisance of noise generated during the construction of the railway line is complicated due to the dimensions of the machinery, the technological requirements and the characteristics of the noise sources themselves. The best solution to reduce noise during construction is to reduce it at source by using modern machines and equipped with elements that reduce noise emissions to the environment (i.e. suppression of engines, exhaust ejections) complying with the applicable noise emission regulations and appropriate organisation of works in such a way that the work of the loudest machines is as short as possible in the area of built-up areas.

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

At the decommissioning stage, the use of similar machines (similar to noise emission levels) is envisaged as at the stage of implementation. Therefore, the impact of the decommissioning phase is estimated at the same level as the implementation phase.

Impact on vibration

As regards the implementation and possible liquidation of the project (both of the options analysed), it is not envisaged to carry out works resulting in significant vibration emissions into the environment.

In the case of the construction of new or reconstruction of existing engineering facilities and the installation of pile foundations of traction poles in residential and historic buildings (conservation protection) located in close proximity to the railway line, works will be carried out on the basis of methods characterised by a smaller zone of dynamic influences, e.g.: drilling or excavation in sealed walls.

Impact on electromagnetic field emissions

When analysing the impacts in terms of the analysed options, no negative impact of electromagnetic fields on the environment and human health during the construction and decommissioning phase is foreseen.

Impact on material goods

Construction works will be carried out in the border of the area under the control of the Investor and other entities including natural persons. The reconstruction of the railway line and the construction of links involve the need to expropriate the area.

All works will be carried out under construction supervision in accordance with the applicable regulations. Construction works will be carried out and secured in such a way that the objects in their immediate vicinity will not be damaged — this applies to both buildings and underground weapons networks.

As part of the implementation of the investment, it is envisaged to demolish 6 buildings (excluding residential buildings) in the investment option W1 and 11 buildings (including 4 residential buildings) in the alternative option W2.

The implementation of the planned project will lead to an increase in the Investor's assets and may contribute to the revival of the local real estate market in the areas located in the investment area. The investment may have a negative impact on the value of properties adjacent to the railway lane.

Impact on animated nature

The impact assessment was presented on the basis of the data from the nature inventory carried out and the information provided by the RDOŚ in Gdańsk. As the investment option differs only slightly from the alternative option, the impact on nature at the implementation/decommissioning stage for both options will be the same.

For the purpose of assessing the impact, including the impact of construction works and operation of the railway line, on the identified natural habitats and habitats of species of flora and fauna, it is assumed that the occupancy belt for the implementation of the investment will be 15 m from the axis of the extreme track designed on both sides of the railway line. According to the assumptions, during the implementation of the investment will be carried out cutting of trees and shrubs — at a distance of up to 15 m from the axis of the track along the entire track for the course of all analysed railway lines. Thus, fragments of natural habitats in the 15-meter buffer will be destroyed.

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

In the area of the planned project, on the basis of a natural inventory of a distance equal to or less than 15 m from the extreme track, fragments of 23 lobes belonging to 6 protected natural habitats were found. The total area of natural habitat lobes exposed to destruction amounts to 6.0274 ha, which represents 1.42 % of the area of the lobes in the buffer covered by the natural inventory, i.e. 150 m from the axis of the extreme track. For most habitats, their area extends beyond the inventory site, so it can be concluded that their total area is larger.

2 sites of one vascular plant species, which are partially protected, are exposed to direct destruction — sand blankets with a total area of 0.0042 ha. The destruction of individuals on an area of 0.58 % will not significantly affect the state of the local population. In the case of destruction of habitats and plant sites covered by species protection, the *Helichrysum arearium* sand blankets for the above action will be granted a permit (derogations from the prohibitions of Article 52 of the Nature Conservation Act) from the Regional Director for Environmental Protection in Gdańsk in accordance with Article 56 of the Nature Conservation Act. The investment during the implementation phase may also have a negative impact on moss species, which are partially protected by law. This effect may be reflected in the destruction of 8 sites, two species: the shrimp of *Calliergonella cuspidata* and the Pleurozium *schreberi* armrest thanks to the work carried out at a distance of up to 15 m from the extreme designed track. The total area of stands exposed to direct destruction in the 2x15m belt will be 19.51 ha, of which 15.30 hectares are surfaces with a common armrest. However, this represents only 7.8 % of the habitat area of this species in the area under consideration. The planned felling of trees up to 15 m from the axis of the extreme railway track will directly affect the destruction of the habitats of mushrooms and lichens. Three sites of two species of macroscopic fungi, one species of strict conservation, *Hydnellum concrescens*, associated with mycorrhizic relationship with oaks and one species with hazard category R — *exidia truncata*, will be destroyed. In the case of lichenised fungi (lichenised fungi) exposed to destruction, there are 8 sites with 6 species, including 5 partially legally protected and 1 with NT hazard category.

On the basis of a natural inventory up to 15 m from the extreme designed railway track, there were 8 invertebrate species under legal protection, including 1 species of snail and 7 species of insects. The species most exposed to negative effects from construction works are primarily red forest ants. Most of the nests of protected ants are more than 15 metres away from the analysed railway lines. The area of habitats of invertebrate species exposed to destruction in the 2x15 m belt is 4.5053 ha, representing 11.31 % of all habitats found in a buffer 150 m from the axis of the extreme track.

The herpetofauna habitats identified in the buffer 2 x 15 m from the axis of the extreme designed track are characterised by this project with a high diversity, area extension and overall surface area. These habitats are both permanent and ephemeral reservoirs, mainly related to the periodic filling of local recesses in the agricultural landscape. For this reason, the modernisation of the lines will affect the habitats of amphibians and reptiles not only at the construction stage, but also during the movement of construction equipment or, as an indirect effect, which may manifest itself as a change in water relations and possible drainage in the short term of aquatic habitats located in the vicinity of deep excavations. The area of habitats of invertebrate species exposed to destruction in the 2x15 m belt amounts to 4.5053 ha, representing 3.81 % of all habitats found in a 150 m buffer from the axis of the extreme designed track, while the reptile habitats are 8.5952 ha, which represents 56.38 % of the habitats identified.

At the stage of implementation of the investment, a significant threat will be possible for birds to be disturbed and disturbed, including breeding stations, feeding grounds, places of concentration of birds in the non-breeding period, resting places and featherlands. Due to the planned logging of trees and shrubs in a buffer of 2 x 15 m from the axis of the extreme designed track, it is also possible to destroy part of the habitats of nesting species directly next to the railway line and to withdraw them from occupied habitats due to changes in habitat conditions. . However, given the large habitat area and the operation of the line for many years, the potential damage to bird habitats should be considered as of little importance. After the implementation of the investment, birds will be able to

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

reuse the railway area, among others for feeding, concentration in the non-breeding period, resting and feathering.

The area of the identified bat habitats will be limited only temporarily during the performance of the works. Although all bat positions shown during the inventory work are within the investment, it should be emphasised that this is due to the methodology — the locations of listening points and transects were located at the track itself. However, the implementation of the investment is not tantamount to the destruction of their habitats. Due to the nocturnal lifestyle of bats, the way of using feeding grounds located within the scope of investment works will not be disturbed by the implementation works. The implementation of the investment will not destroy the shelters of bats. During their inventory carried out for the purposes of this investment, no bats were found to be present in railway infrastructure facilities — in buildings, culverts, viaducts and bridges — resting, swarming, breeding or wintering places.

The stage of implementation and liquidation of the investment, as in the case of amphibians, reptiles and birds, will affect mammals at the time of work along the railway line and during the movement of construction equipment. The track is not a physical obstacle to large and medium-sized wild animals, i.e. fox, wild boar, deer, deer.

Impact on Protected Areas

The implementation of the planned investment crosses the boundaries of two landscape parks (Kashub Landscape Park and Tri-City Landscape Park). The implementation of the investment will not negatively affect the maintenance and restoration of the mosaic of plant communities, appropriate for various types of natural environment of Kashubian Landscape Park and Tri-City Landscape Park, and in particular on springs, peat bogs and phytons with the participation of boreal and sub-mountain species, maintenance of spatial cohesion of forest ecosystems and their renaturalisation, and protection of natural and semi-natural collections along the rivers and shores of lakes, in order to achieve the biological development of their periphery. The most valuable areas of both Parks are the investment area of min. 15 m and protected in the form of nature reserves. In addition, the most valuable protected Natura 2000 forest habitats (and thus plant communities) are located at a distance of at least 25 m from the boundaries of the planned investment. Therefore, the investment does not jeopardise their species composition, age and spatial structure and diversity of habitats.

The investment area is also located in close proximity to two reserves — Jar Rzeki Raduni and Kacze Łęgi. None of the above-mentioned reserves is crossed by the analysed railway lines, but they are within the range of the inventory buffer of 2x150 m. In the case of the Jar River Raduni reserve, the planned felling of trees in the strip up to 15 m from the axis of the LK 201 extreme track will not cover the area of the reserve, as it is located at the nearest location, at least 21 m. The investment under consideration, due to the nature of the works and its location, will also not affect the dynamics of the slope and fluvial processes of the Raduni river bay, and therefore will not adversely affect the preservation of the unique ecosystems of its breakthrough section.

The boundary of the Kacze Łęgi nature reserve in the closest place from the axis of the extreme designed track is approx. 9 m. The direct threat of interference in this area and its natural values is the felling of trees in the strip up to 15 m from LK 201. This is a belt with a length of approx. 900 m (km 198,200-199.100). One natural habitat with code 9160, occurring at a distance of less than 15 m from the axis of the extreme track being designed and present in the animal habitat reserve, is endangered.

The investment crosses two areas of protected landscape: Protected Landscape Area of Raduni Valley and Kartuski Area of Protected Landscape. No negative impact is foreseen on the objectives and objects of protection of the Protected Landscape Area Raduni Valley. In the case of the second area, the investment may have a potentially negative impact on the buffer located 150 m from the axis of the extreme designed lake track and swamping. In the case of the investment under consideration, no change in water relations is foreseen by appropriate minimisation measures.

The extent of the impact of the planned project does not apply to the Natura 2000 sites of the Bay of Pucka, Leniec nad Wierzyca, Prokowo, Cliffs and Stone Reefs Orłowa. These areas are about 1-

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

1.5 km from the axis of the extreme track. The works at the construction stage or the operation of the railway line will have no direct or indirect impact on the functioning of the key populations of the species protected in the area concerned. However, the planned project will not be implemented within the Natura 2000 site Jar River Raduni. This area is located on the right side of the track of line 201. In the nearest location (LK 201, Km 172 + 906), the boundary of the analysed Natura 2000 site is at a distance of 21 m from the axis of the extreme designed track. The nearest natural habitat is a habitat with code 9160 (sub-Atlantic area), which is at the same time protected by the area concerned. It is located at a distance approx. 25 m from LK 201. If the construction works are carried out in accordance with the recommendations, the probability of the investment being affected by the above-mentioned habitat is very low.

In the case of the implementation of the investment, there is no need to directly interfere with any patch of natural habitats which are the subject of conservation of the Natura 2000 site Uroczyska Pojezierza Kaszubskiego, located within the boundaries of that site. None of the fragments of habitat exposed to destruction are located within the boundaries of this area. At risk of deterioration of conservation is one patch of habitat code 3150 located in km 152 + 553 at a distance of 31 m from the axis of the extreme designed track on the left side of LK201. It will not be destroyed, but habitat 3150 is sensitive to changes in groundwater levels and may potentially deteriorate. Potential impacts may occur in the absence of minimisation measures.

At a distance of 18 m from the railway line 201 there is also one natural and landscape complex Rynna Dąbrowsko-Ostrzycka. Analysing the nature and scope of the planned project, it was assessed that the impact on the terrain would not be significant. Similarly, the investment will have a marginal impact on the breeding sites of wet birds.

In the immediate vicinity, at a distance of 11 m from the implemented investment, there is one ecological use of Lake Kackie. The conservation objectives are primarily habitats and sites of protected bird species, amphibians and reptiles. Due to the fact that it is a wetland and the planned works will take place in the immediate vicinity of the shore zone of the lake, a deterioration of the habitats of animal species should be expected, consisting of a potential slight decrease in its area and partial temporary dehydration. The impact at the stage of implementation should be considered significant. However, if the appropriate minimisation measures described in Chapter 8 are applied, the impact of the investment on the site concerned will be significantly lower and given the natural capacity of animal habitats, including bird, amphibian and reptile habitats to regenerate (assuming that there is no negative impact in the long term), the negative impact and disturbance of these habitats should be considered temporary. Furthermore, it is worth noting that, in accordance with the provisions of the Nature Conservation Act of 16 April 2004, the prohibitions laid down in the acts establishing this area do not apply to the planned project, since it is the implementation of a public-purpose investment. At the stage of implementation of the investment, every effort will be made to ensure that the impact of the investment on the site is as small as possible (Chapter 8).

On the basis of the analysis carried out, the planned investment will not contribute to the cutting of any tree constituting a natural monument, due to the fact that none of them is less than 15 m away from the axis of the extreme designed track (it is not in the strip intended to be cut out). One tree (PL.ZIPOP.1393.PP.2205083.849) is located at a distance of 15 m from the axis of the extreme designed track. According to the expert, it is not necessary to cut this tree.

Impact on the landscape

In the context of the impact on the landscape, works related to the construction (or demolition in the decommissioning phase) of tracks, engineering facilities and associated infrastructure are envisaged.

The new element of the landscape characteristic of this stage will be the infrastructure associated with the construction of an additional track, storage yards and bases of equipment, as well as a new strip of land constituting a construction site. Storage sites and equipment bases will, for organisational reasons, be located within the existing railway infrastructure. The main elements

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

affecting changes in physiognomy of the site will take place mainly in the area of bases and storage sites and at the site of construction of additional tracks.

The characteristic elements of the construction landscape will move successively along the railway line as the work progresses and will be of a short-term nature.

A significant part of the works along the analysed railway lines will take place within the boundaries of trees (no view axes) as well as within the existing buildings of the town. It should therefore be assumed that the construction works related to the construction of the railway line in question and the accompanying infrastructure will not significantly affect the landscape features of the area adjacent to the lines.

Impact on monuments

Protection of the conservator of monuments is covered by cubature objects connected historically to line 201. This line on the Gdynia — Kościerzyna section was built in the interwar period. The project does not provide for interference with historic buildings located in the immediate vicinity of lines 201, 214, 219. In the collision with the analysed railway lines, only those monuments (protected in the register of monuments) which form part of these lines — bridge objects, culverts and cubature buildings related to the need for traffic management on the line remain remain.

The planned scope of modernisation works will not interfere with the state and structure of the protected urban areas (Gdyni, Kartuz and Kościerzyna). Modernisation works will not violate the spatial structure of these areas. They will be implemented within the boundaries of the separate areas as railway areas already converted for the purpose of this function.

The analysed railway line No. 201 borders directly with the archaeological protection zones. Directly at the track or in the buffer zone, there are areas where archaeological monuments from different periods of prehistory have been discovered during surface research. They are protected by conservation.

Waste management

At the stage of implementation and possible decommissioning of the investment, the source of waste will be:

- demolition of existing railway tracks (substructure, sleepers, rails, traction network),
- demolition of engineering and volume structures,
- elimination of collisions with land armament,
- cutting of trees and shrubs,
- construction and finishing works,
- packaging of the materials used,
- waste from maintenance of construction machinery,
- technical and social facilities of construction.

5.2. Stage of operation

Impact on the ground-water environment, including on water bodies

At the stage of operation of the railway line, both in the investment option (W1) and in the alternative option (W2), there will be no negative impact on the aquatic environment. Rainwater and meltwater coming from railway sites do not constitute a source of pollution by petroleum hydrocarbons and a general suspension, as indicated by the results of analyses carried out on behalf of PKP PLK A.S in 2013 and 2014.

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

Effects on atmospheric air

During operation, emissions from railway lines as well as planned lines, which will be electrified, will be low. Its only source will be diesel locomotives on two sections of lk 229, whose share of overall rail traffic on the lines covered by the project will be low and no exceedances are expected to exceed the permissible levels of substances in the air. Therefore, there is no need for additional solutions to minimise the impact of the investment on atmospheric air.

Impact on acoustic climate

The calculation model used for noise impact forecasts was built on the basis of: existing numerical terrain model taking into account the planned changes (e.g. track mileage corrections), inventory development and spatial planning. The model is based on the results of noise measurements made at points adjacent to the analysed railway line. The results of the measurements were used to calibrate sound sources — railway lines — in order to reproduce as accurately as possible the actual acoustic conditions in the computer model. Then the calibrated model introduced the forecasted train intensity and speeds, taking into account the improvement of the track condition and the quality of the rolling stock, and area calculations (noise maps) and calculations in points on the facades of buildings were carried out. The calculation takes into account the impact of noise also coming from other railway lines outside the scope of the investment.

According to the Environmental Protection Act, the following noise assessment indicators apply to the assessment of the acoustic climate:

- LAeq D — equivalent sound level A for the time of day understood as a time interval from h. 6:00 p.m. until the hour. 22:00 (reference time interval of 16 hours),
- LAeq N — equivalent sound level A for the time of night understood as a time interval from h. 10:00 p.m. until 10:00 p.m. 6:00 (reference time interval of 8 hours).

On the basis of the Regulation of the Minister for the Environment on permissible levels of noise in the environment, the limit value of equivalent sound level for day and night seasons is determined depending on the type of noise source and the way in which the area is managed in its surroundings.

It's a tab.2 Permissible environmental noise levels caused by roads or railways.

L.P.	Purpose of the site	LAeq D reference time interval of 16 hours of daytime	LAeq N reference time interval of 8 hours at night
1	a) Protection zone "A" health resort b) Hospital areas outside the city	50	45
2	a) Single-family housing areas b) Development areas related to the permanent or long-term stay of children and young people(#) c) Areas of Social Welfare Homes d) Hospital areas in cities	61	56
3	a) Multi-family housing and collective housing b) Areas of farmhouse development c) Leisure & Recreation Area(#) d) Residential and service areas	65	56
4	Areas in the inner city zone of cities with more than 100 inhabitants	68	60

(#) If these areas are not used, according to their function, at night, they are not subject to an acceptable noise level at night.

The calculated values for exceeding the permissible noise levels are small. Based on the results of calculations in the facades of buildings for each floor, it was found that exceedances will occur at night and will not exceed 2 dB in both investment options analysed (W1 and W2). Taking into account the uncertainty of the results of the calculation, it was decided that for exceedances below 1 dB no

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

safeguards would be proposed at this stage — at these locations, measuring points were designated to carry out noise tests at the stage of preparing the post-implementation analysis, which will determine the actual impact of the railway line on the acoustic climate. For exceedances of 1-2 dB, it is proposed to use acoustic protections in the form of silencers mounted on rails. After proposing acoustic protections, in order to verify them, area calculations (noise maps) and calculations in points on the facades of buildings were performed again. The results of the calculation after the application of the protections showed that there were no exceedances of the permissible noise levels in both variants.

Impact on vibration

As part of the analysis, it was concluded that the emission of vibrations caused by train crossings on the railway line covered by this investment task will not be felt for structures adjacent to the railway lines of buildings and will not exceed the threshold of vibrations on people residing in buildings.

In addition, as part of the modernisation of railway lines, the reduction of the impact of vibrations will be ensured by the use of new rails that do not have damage (e.g. bursting, exfoliation, corrugated wear, crack creases, etc.), curing the substructure of the track and the use of elastic rail fastening.

Impact on electromagnetic field emissions

The analysis carried out for both options does not foresee negative effects of electromagnetic fields on the environment and human health at the operational stage.

Impact on animated nature

With properly carried out construction works (this applies in particular to dehydration works), the modernised and newly built railway line will not have a significant negative impact on natural habitats. Potential threats to Natura 2000 natural habitats at the exploitation stage may be invasive species or random events, e.g. fire, rail traffic disaster. The greatest risks may also be associated with potential accidents or incidents. Potential impacts at the exploitation stage of the project on protected plant species may relate to indirect random effects related to, for example, surface water pollution. However, these will be practically negligible due to the quality of the water and the way water is discharged from the track.

The potential impact on theirtiofauna at the operational stage of the project may be related to the discharge of rainwater and meltwater from the railways to surface waters. According to the materials provided by PKP PLK S.A., the report on the quality of rainwater and meltwater discharged from the railways did not identify impurities in the form of suspensions and petroleum hydrocarbons in quantities that could affect theirtiofauna. When using herbicides at appropriate doses and conditions in accordance with applicable law, this effect should be considered negligible. However, the greatest risks are related to potential accidents, incidents or accidents in rail traffic, which, however, are only unpredictable events.

The reconstruction of the railway line will not significantly affect the status of the population of the listed amphibian and reptile species. Potential impacts will occur at a similar level to the operation of the unmodernised line. The possibility of migration will be ensured through existing culverts. Maintaining the gap between the ballast and the foot of the rail will increase the possibility of crossing the railway line, especially through amphibians and reptiles.

Traffic of rail vehicles can cause bird mortality due to collisions in places where birds are highly concentrated. In the case of the investment under consideration, the scale of this impact should not be high. The expected increase in the speed of trains on the renovated railway line may increase the likelihood of collisions with birds, but the scale of this phenomenon will not be important for maintaining the stability of the local populations of protected bird species. The scale of collisions between birds and rail vehicles is very low compared to road transport. This is mainly due to much

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

lower traffic on railway lines. Only the intensive operation of the railway line in a limited manner can affect the disturbance and disturbance of birds.

Modernisation of the railway line will not significantly affect the status of the population of amphibian and reptile species. Potential impacts will have a similar level to the operation of the unmodernised line. The possibility of migration will be ensured through existing culverts. The formation of an interval between the ballast and the foot of the rail usually also allows for crossing the railway line, especially through amphibians.

At the operating stage, due to the specificity of the impact of the railway line limited to noise emissions and due to the lack of identified facilities used by bats as breeding, rearing and wintering in the immediate vicinity of the railway line, no negative effects on the identified chiroptero fauna species are foreseen. The risks of chiroptero fauna associated with the movement of trains are relatively poorly studied, and the observations so far suggest that bat mortality from collisions with trains is probably very low and is not significant in their population. The modernised sections of lines 201, 214 and 229, as well as the two links, will also not constitute a barrier for feeding and wandering bats.

The operation of the analysed sections of railway lines will not pose significant risks to the mammalian population. The project will not create new ecological barriers, as the use of the analysed sections and the development of their surroundings do not change significantly. Therefore, the conditions for migration so far will not change, i.e. the migration of mammals across the line will be undisturbed. Mammalian species identified within the scope of the investment are common species and numerous throughout the country, among others: fox, wild boar, deer, deer. The populations of these species, due to their large numbers, wide spread throughout the region and the country and the strongly limited impact of the project phase, are in no way jeopardised by the investment.

However, no negative effects are expected at the exploitation stage on the population of fungi, including lichens and invertebrates.

Impact on Protected Areas

No adverse effects are expected at the operational stage on: nature reserves, landscape parks, protected landscape areas, Natura 2000 sites, natural and landscape complexes, ecological sites and nature monuments.

Impact on the landscape

The permanent landscape effect after the implementation of the investment options W1 and W2 will be: new and rebuilt track layout, new engineering facilities, rebuilt communication system at stations and stops, new embankments and slopes, overhead electrical traction and all associated facilities and devices.

The spatial impact of the construction and expansion of the railway line and railway stations (mostly following the old track) is less burdensome to the landscape than the construction of new facilities. The railway line that has existed for years is an integral part of the landscape and will not change the foregrounds of exposures, axes or viewpoints.

A significant change will be the appearance in the landscape of new elements of railway infrastructure related to the construction of links and a new track, but these elements will be mainly carried out at the ground level, so they will not disturb the exposure or viewing axes.

Impact on monuments

No negative impact factors on protected facilities are foreseen at the operating stage.

Waste management

In the exploitation phase, the generation of waste related to:

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

- maintenance of technical infrastructure including iron roads (repair, maintenance, weeding, maintenance of ballast),
- maintenance of cleanliness (perirons and tracks),
- service of travelers.

No negative environmental impact from waste management is expected, both at the operating stage.

6. CLIMATE ISSUES

Analysing the impact of the investment on the climate, it was considered that its implementation would not be a source of significant greenhouse gas emissions into the atmosphere. As a result, the project will improve and modernise the technical condition of the line (total electrification) and to a large extent will reduce emissions from engines running on the line of combustion locomotives. In this respect, the project will have a positive impact on the climate. With the implementation of works on railway lines No. 201, 214, 229, as a result of which the quality of transport will improve, the flow of traffic will increase, as well as the transfer of some of the existing freight transport from road to railway. In the context of climate impacts, such a change in the transport system reduces greenhouse gas emissions.

From a climate perspective, as a global phenomenon, the impact that these railways will have on this component will not be significant.

7. IMPACT ON BIODIVERSITY

The planned investment includes the modernisation of the currently existing railway lines 201, 214, 229 and the construction of two 214/229 and 201/229 links. Therefore, the nearest sections along the tracks are ruderal areas. The implementation of the investment may affect the biodiversity of natural valuable areas, including forms of nature conservation, which intersections, among others, landscape parks, protected landscape areas, Natura 2000 sites, nature reserves, natural and landscape complexes, ecological landscaping and existing nature monuments. The investment also intersects watercourses and reservoirs that can be a refuge of biodiversity. In order to prevent and/or reduce the risk of deterioration, appropriate minimisation measures will be applied at the stage of implementation and operation.

8. LIST OF ACTIONS MINIMISING IMPACT AT THE STAGE OF IMPLEMENTATION, DECOMMISSIONING AND OPERATION

Impact on the ground-water environment, including on water bodies

Phase of implementation/decommissioning

Actions to minimise the negative impact of investments at the implementation stage:

1. Construction facilities, including machinery park, material bases, waste storage sites, locate: at a distance of at least 50 m from the watercourses or beyond the flooding route, if its width is less than 50 m; outside the wetlands.
2. Refuelling sites for construction machinery and places of operation of mechanical devices protect against possible contamination of the soil and water environment by curing e.g. concrete slabs and sealing with e.g. geotextile
3. The building facilities shall be provided with means to combat leakage and spillage of dangerous substances, including: mats, sorbents.

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

4. The building facilities will be supplied with portable sanitary facilities, which will be systematically emptied.
5. The building facilities are located outside the zones for indirect protection of groundwater intakes indicated in Tab. 24 of the EIA Report.

Phase of operation

Actions to minimise the negative impact of investments at the implementation stage:

1. Carry out laryharvesting of grasses, demulsion and removal of waste from the ditches of railway dehydration.
2. Carry out systematic cleaning of bridges and culverts with low light.
3. Use herbicides in the doses recommended by the producer, for which the Minister of Agriculture and Rural Development has granted the relevant authorisation for the placing on the market and use of those products which have undergone a risk assessment in relation to human and animal health and the environment, in accordance with the provisions of the Act of 8 March 2013 on plant protection products. In addition, it is necessary to comply with the provisions of the Regulation of the Minister of Agriculture and Rural Development of 31 March 2014 on the conditions of use of plant protection products specifying, inter alia, the minimum distance from reservoirs and watercourses and apiaries for the application of the product, atmospheric conditions i.e. wind speed and direction, relative humidity in which the agent can be used or as indicated on the label of the preparation.

Effects on atmospheric air

Phase of implementation/decommissioning

Emissions of substances into the air arising during the implementation and possible liquidation of the investment are periodic. Emissions of substances from the engines of vehicles, machinery and equipment in the course of the work are partly compensated by restrictions on vehicle traffic. Using machines and devices equipped with internal combustion engines that meet the emission parameters requirements in accordance with the Regulation of the Minister of Economy of 30 April 2014 on detailed requirements for internal combustion engines in the scope of limiting emissions of gaseous and particulate pollutants by these engines (Journal of Laws of 2014 No. U. 2014 item. 588), there is no need for specific solutions to protect the environment from adverse effects on air pollution at the construction stage, other than those normally used, i.e.:

- storage of loose materials under cover,
- transport of bulk materials under tarpaulins,
- the use of a washer for washing wheels at the exit from the construction site.

Phase of operation

During operation, emissions from railway lines as well as planned lines, which will be electrified, will be low. Its only source will be diesel locomotives on two sections of I k 229, whose share of overall rail traffic on the lines covered by the project will be low and no exceedances are expected to exceed the permissible levels of substances in the air. Therefore, there is no need for additional solutions to minimise the impact of the investment on atmospheric air.

Impact on acoustic climate

Phase of implementation/decommissioning

Reducing the nuisance of noise generated during the construction of the railway line is complicated due to the dimensions of the machinery, the technological requirements and the characteristics of the noise sources themselves. The best solution to reduce noise during construction is to reduce it at source by using modern machines and equipped with elements that reduce noise emissions to the environment (i.e. suppression of engines, exhaust ejections) complying with the

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

applicable noise emission regulations and appropriate organisation of works in such a way that the work of the loudest machines is as short as possible in the area of built-up areas.

Phase of operation

Based on the results of calculations at the points on the facades of buildings for each storey, it was found that exceedances will occur at night and will be no more than 2 dB. Taking into account the uncertainty of the results of the calculation, it was decided that for exceedances below 1 dB no safeguards would be proposed at this stage — at these locations, measuring points were designated to carry out noise tests at the stage of preparing the post-implementation analysis, which will determine the actual impact of the railway line on the acoustic climate. For exceedances of 1-2 dB, it is proposed to use acoustic protections in the form of silencers mounted on rails. After proposing acoustic protections, in order to verify them, area calculations (noise maps) and calculations in points on the facades of buildings were performed again. The results showed that there were no exceedances of the limit values after the use of acoustic silencers.

Impact on animated nature

Phase of implementation/decommissioning

During the implementation of the investment, natural supervision will be ensured: general, botanical, mycological, ornithological, chiropterological. Due to the fact that the potential impacts were not considered significant and the entire project will be carried out under natural (general) supervision, there is no need for specialised teriological supervision.

On the basis of the natural inventory, it was found that the population of one vascular plant species — *Helichrysum arenarium*, which is partially protected in 2 habitats with an area of 0.0042 ha (141 + 778 km LK 201 and 163+ 838 km LK 201) is at risk of destruction. In order to limit the possible destruction of the remaining larger lobe of the habitat, a fence will be used.

As part of the minimisation measures, it will be *necessary to move *Pleurosticta acetabulum** — the current position in km 158 + 135 on railway line No. 201 (distance from the 0 m line). The transfer will take place under the supervision of a mycologist. *Pleurosticta acetabulum* is a species endangered by extinction (hazard category EN) requiring special protection, and has been identified on only one station along the entire inventory sections of the railway lines. Prior to the commencement of the procedure, the transfer of the tribe of the protected species — chalice veil will be obtained a permit from the Regional Directorate for Environmental Protection in Gdańsk for the above action. The destruction of tribes of other species at the construction stage will not cause significant damage to the population.

In case of negative impact of the investment on fauna, the organisation of the works will be carried out in such a way as to limit the occupancy of the habitat to the necessary minimum. The intensity, scope and area of work, especially heavy equipment, will be reduced to a minimum in the vicinity of the identified animal sites. Transport roads will be designated as far as possible from the designated sites and their potential habitats. In the absence of such a possibility, the construction site will be properly secured and monitored by nature supervision. Places for storage of building materials, machinery stops will be located away from existing water reservoirs and watercourses and protected against the entry of harmful substances into the ground and surface water, e.g. petroleum substances from motor vehicles used in construction.

Works related to the destruction/removal of bird habitats (carriages, trees, reeds) will be carried out out of the bird breeding season (except for the period 1 March — 15 October). The most intensive modernisation works will be carried out outside the breeding period. Alternative places of refuge and nesting will be created in the form of nesting booths.

Regardless of the scope of the planned upgrade of the culverts, where the nature supervision finds the winter shelters of bats in the culverts, none of the works within the indicated culverts will be carried out without consultation with the chiropterologist, especially during the winter period (from 15 November to 15 March). Depending on the scope of the upgrade of the culverts, it will be possible to

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

agree on other minimising measures in consultation with the contractor and taking into account the technical conditions (artificial gaps, laying of punch bricks, leaving existing gaps, etc.).

Phase of operation

There is no need for minimisation measures for identified natural habitats, protected plant and animal species, including invertebrates, amphibians and reptiles, birds, bats and mammals. In the case of ichthiofauna, the following minimisation measures will be applied at the operational stage: maintaining an efficient drainage system and applying the emergency procedures set out in the investor's internal instructions.

Impact on Protected Areas

Phase of implementation and decommissioning

The location of the building site's facilities, including storage and storage of raw materials and waste, car parks, parking spaces and heavy equipment transshipment within the Natura 2000 site of Uroczyńska Pojezierza Kashubian Lake District will be limited to railway stations/rail stops. In particular, existing access roads will be used to access construction equipment. If there is a need to create a new access road, it will be located as far as possible within the investment area. Any necessary exits will be agreed with nature supervision.

The facilities of the construction site, including storage places for raw materials and waste, parking lots, parking and handling of heavy equipment and access roads, will not be located within nature reserves (Kacze Łęgi, Jar River Raduni) and ecological use of Lake Kackie. These areas will be secured by a high (at least 2 m) temporary fence before work begins.

Phase of operation

No adverse effects are expected at the operational stage on: nature reserves, landscape parks, protected landscape areas, natural and landscape complexes, ecological sites and natural monuments.

Impact on the landscape

Phase of implementation/decommissioning

The impact on the landscape that will occur during the implementation phase will be reversible. It is recommended, in terms of conditions, to use the site during the construction phase, to bore access roads as far as possible on the basis of the existing road network.

Stage of operation

The most important measure to minimise the negative impact of the constructed railway line is the systematic organisation of the rail lane (grass removal, waste disposal).

Impact on monuments

Phase of implementation/decommissioning

All earthworks must be carried out under constant archaeological supervision. In the case of collisions with archaeological sites, earthworks should be preceded by pre-emptive archaeological research. For the arrangement of archaeological surveillance in earthworks in the archaeological protection zone, please contact the Pomeranian Voivodeship Conservator of Monuments in Gdańsk.

It is recommended that construction sites, storage sites of materials should be located as far as possible at a distance from the historic buildings, ensuring their adequate protection.

Phase of operation

There are no solutions to protect the environment.

Waste management

Phase of implementation/decommissioning

Waste storage should be carried out in accordance with Article 25 of the Waste Act on waste storage conditions. In addition, according to the provisions of the Internal Waste Management Instructions Is-1, waste should be:

- store selectively in segregated and adapted places, under conditions that prevent pollution from entering the environment, and ensure their reuse or subsequent reception by operators holding appropriate authorisations in this regard;
- store in accordance with the requirements relating to environmental protection and safety of life, human health, in particular taking into account the chemical and physical characteristics of the waste, including the state of concentration and the risks that the waste may cause;
- store on the premises to which the Company has legal title, in designated places;
- it shall be prohibited to mix hazardous waste with non-hazardous waste;
- it shall be prohibited to store hazardous and non-hazardous waste on the site for that purpose;
- waste in liquid form shall be stored in sealed containers made of materials resistant to waste stored therein, equipped with sealed seals, hardened places, protected against soil contamination and precipitation, equipped with facilities or means to collect leaks of that waste;
- hazardous waste should be stored in sealed containers made of materials resistant to waste stored in them or in hardened places, protected against soil contamination and atmospheric precipitation; excluding waste in the form of wooden railway sleepers (code 17 02 04*) and much less likely hazardous waste in the form of track thrust (code 17 05 07*) which, due to its dimensions, weight and properties, is allowed to be stored directly on the construction site and the building site, which will not pose a risk to the environment.

Stage of operation

- the reduction of the amount of waste generated at the operational stage will be minimised by applying the waste prevention procedure by maximising the use of materials with performance characteristics;
- the storage of waste will take place in the area to which the waste producer has legal title;
- the waste will be stored selectively in separate and adapted sites, taking into account the characteristics of the type of waste, including the state of concentration;
- storage facilities will meet conditions ensuring the protection of human life and health and the protection of the environment;
- the stored waste will be transferred to entities with appropriate permits or authorisations for the management of a given type of waste.

9. MAJOR ACCIDENTS, NATURAL DISASTERS AND CONSTRUCTION

The definition of a major accident is defined by the Environmental Protection Act of 27 April 2001 (one text: Journal of Laws U. 2018 item. 799) is an event, in particular emission, fire or explosion, arising during an industrial process, storage or transport, in which one or more dangerous substances occur, leading to an immediate or delayed threat to human life or health or the environment.

A major industrial accident within the meaning of Article 248 of the Environmental Protection Law cannot occur on the section of the railway line, only a serious failure is possible (one text: Journal of Laws U. 2018 item. 799). Serious failures can occur along the reviewed section of the line, in the square and the building facilities, as well as roads and facilities surrounded by the railway area. Environmental pollution may occur as a result of:

Report on the impact of the project on the environment
for the project "Works on an alternative transport route Bydgoszcz — Tri-City, stage I"

- a single, large uncontrolled discharge of a dangerous substance into the environment, e.g. following a railway accident. One or more components of the environment may be polluted.
- small but long-term leaks (spraying) of transported hazardous substances along the entire route, as a consequence of technical and operational defects, including leaks, e.g. valves, packaging, etc. These pollutants migrate deep into the ground during precipitation and are flushed into drainage ditches.
- small, single-use leaks of fuel or other operating fluids from traction vehicles, motor vehicles and construction machinery, which will be immediately removed by the railway staff or the Contractor.

The scale of the risk in the event of a major accident depends on a number of factors, including:

- the amount of the chemical released into the environment,
- the length of time the substance remains in the environment,
- the physical state of the substance/material,
- toxicity of the substance/material,
- topographical and meteorological conditions,
- degree of urbanisation of the area.

Such events are largely counteracted by the technical, organisational and appropriate provisions used in rail transport, which regulate the principles of maintaining safety in transport, including the transport of dangerous goods, such as:

- requirements for the construction of packaging (including tanks) for the carriage of dangerous goods specified in the standards and in the Regulations for the international carriage of dangerous goods by rail,
- entry into service only of efficient wagons and traction vehicles,
- efficient, computerised railway traffic control system,
- emergency notification plans for accidents and railway incidents, together with instructions for alerting on-call traffic,
- plans to ensure the safety of high-risk dangerous goods,
- a system of periodic training for employees related to the transport of dangerous goods,
- maintenance of own emergency services (technical rescue trains and emergency teams in Railway Line Plants),
- the use by contractors of efficient vehicles, machinery and equipment.

At the stage of the project, the following events related to the transport and use of dangerous substances are possible:

- small fuel leaks during refuelling of machinery and equipment at the construction site,
- minor leaks of operating fluids during the operation of vehicles, machinery and construction equipment,
- fuel leaks from damaged fuel tanks of motor vehicles and railway vehicles and construction machinery and equipment.

In the event of a major accident, rescue operations will consist of:

- neutralise and remove the source of the threat and minimise losses caused by failure and focus on reducing the scale and severity of the threat. These activities will be carried out by specialised units of the State Fire Service and, if necessary, other emergency services (medical, police and other — appointed by the headquarters of the operation),
- the removal of the effects of failures aimed at restoring the state of the environment to a pre-accident state consisting of neutralising the hazardous substance, collecting and cleaning the layer of contaminated soil to remove pollution in surface and/or groundwater. Where it is not possible to completely remove the pollution from any element of the environment immediately after the failure, it will be necessary to use techniques to stop the migration of the pollutants and methods of their removal from the environment during the time necessary. In the above indicated situation, monitoring of the soil-water environment of the contaminated area will have to be applied until it is completely cleaned.

Construction/Natural Disaster

In accordance with construction law, a construction catastrophe should be understood as the unintended, rapid destruction of a building object or parts thereof, as well as structural scaffolding elements, elements of forming devices, sealed walls and casings of excavations.

The main causes of construction disasters include:

- Design defects (insufficient load capacity, failure to take into account Polish climatic conditions in design solutions),
- Structural and technological defects (bad quality of materials used for construction, incorrect execution technology, improper execution of works),
- Incorrect conditions of use of the facility (e.g. too much of its load),
- Explosion of gas,
- Washing of structural elements,
- Technical ageing of buildings,
- Failure to ensure adequate supervision over the execution of construction works,
- A random event that could cause a construction disaster (fires, earthquakes, winds, rain and snow, floods).

The risk of a construction catastrophe in this scope of work always exists, so during the implementation of the project it is important to maintain technological regimes, control of machinery, equipment, control of works, and control of OSH.

In contrast, natural catastrophe means an event related to the action of natural forces, in particular atmospheric discharge, seismic shocks, strong winds, intense precipitation, long-term occurrence of extreme temperatures, landslides, fires, droughts, floods, ice phenomena on rivers and seas and lakes and water reservoirs, mass occurrence of pests, plant or animal diseases or infectious human diseases or other elements. The occurrence of atmospheric phenomena around the site of the project will only have the character of operational handicaps, which may to a limited extent disrupt the operation of the railway infrastructure.

10. POSSIBLE TRANSBOUNDARY IMPACTS ON THE ENVIRONMENT

Due to the location, the scale of the investment and the extent of the impact, the implementation of this project will not manifest itself in the form of a negative impact on the environment outside the borders of the Republic of Poland. The projected very local impact range (limited to areas adjacent to the investment under consideration) will not have an impact on the environment outside the country.

11. ANALYSIS OF THE POSSIBILITY OF SOCIAL CONFLICTS

Despite measurable benefits, the implementation of the investment can be a source of potential social conflicts both during the implementation/decommissioning of the investment and at the stage of its exploitation.

12. COMPARATIVE ANALYSIS WITH AN INDICATION OF ENVIRONMENTALLY ACCEPTABLE OPTIONS

As a result of the multi-criteria analysis carried out in the Report, an investment option (W1) was recommended for implementation, which will adapt the technical infrastructure of the line to the forecasted passenger and freight transport, and thus achieve the assumed objectives of the project.

13. CUMULATIVE EFFECTS

With regard to the investment under consideration, the accumulation of impacts may be caused by a combination of impacts from facilities (industrial plants and communication systems) located in the vicinity of the planned investment. These impacts may occur in terms of increasing noise and vibration levels, increasing dust emissions into the air or increasing emissions of pollutants to surface and groundwater.

Atmospheric air and climate

At the stage of implementation, operation and possible decommissioning, there is no possibility of accumulating the effects of the analysed investment with the linear (road and rail) infrastructure, inter alia, due to the planned scope of work and the fact that the stage of operation of the railway line will not adversely affect the condition of ambient air.

Acoustic climate

The calculation takes into account the impact of noise also coming from other railway lines outside the scope of the investment. In addition, calculations of cumulative traffic noise were carried out. The calculations showed that railway lines do not cause exceedances of the limit values for noise levels. The increased acoustic impact (isolation of permissible noise levels) comes primarily from neighbouring roads and railway lines. Therefore, no accumulation of noise from rail traffic and traffic is foreseen.

Soil and water environment

At the stage of implementation, operation and possible decommissioning, there is no possibility of accumulating the effects of the analysed investment with the linear (road and rail) infrastructure, inter alia due to the planned scope of work and the fact that the stage of operation of the railway line will not adversely affect the state of the ground and water environment.

The natural environment

In the course of the environmental analysis of the projected cumulative impacts, it was concluded that in the case of the natural environment the possibility of cumulative effects for 8 projects (sites) is envisaged. The cumulative impact will concern sections on which works will be carried out on railway viaducts crossing national and provincial roads and other railway lines. Therefore, this impact will be local, small, short-lived and reversible. As a result of the work carried out, there may be temporary degradation of natural habitats near the investment, associated with the conduct of construction works and temporary reduction of animal migration and living conditions. In the modernisation of the line, and especially at the stage of implementation, a number of measures will be taken to minimise the negative impact on the natural environment (Chapter 8). At the exploitation stage, no cumulative effects on the natural environment are foreseen. In other cases, no cumulative effects are foreseen.

Monuments

As regards the impact on monuments, at the stage of implementation, operation and possible decommissioning, there is no possibility of cumulative interactions of the analysed investment with the

linear infrastructure (road and railway), occurring in the immediate vicinity of the analysed investment.

14. PROPOSAL TO MONITOR THE IMPACT OF THE PLANNED PROJECT

During the construction phase, the Contractor will carry out monitoring within the framework of environmental supervision, which will include checking the correctness of the manner in which the construction works are carried out, their compliance with the recommendations of the environmental decision, the agreeing provisions and the recommendations of this report on the impact on the environment.

At the operating stage, due to the expected improvement of the acoustic conditions, it does not seem necessary to monitor the impact of the planned investment.

15. IDENTIFICATION OF THE NEED TO ESTABLISH A RESTRICTED AREA OF USE

The need for the creation of a restricted area is apparent from Article 135 of the Act of 27 April 2001. The Environmental Protection Law and is due to the lack of access to technical, technological and organisational solutions ensuring that acoustic standards are met in an environment.

On the basis of the presented results of acoustic analyses, at this stage it is not foreseen that the introduction of a restricted area is necessary. In the event that the post-implementation analysis shows that the level of noise in the environment is exceeded, minimising measures have been taken.

In order to verify the correctness of the assumptions adopted and to check the actual acoustic impact in places where the possibility of minor exceedances of the permissible noise levels (up to 1 dB) is found, it is recommended to perform a post-implementation analysis in the field of noise.

The control measurements carried out as part of the post-implementation analysis are intended to:

- verification of the accuracy of acoustic forecasts, traffic forecasts presented in this study,
- determination of the actual values of the equivalent sound level A in the environment,
- allow to determine the actual effectiveness of the protective measures taken,
- confirm compliance with acoustic standards in the environment or indicate the need to take additional measures (building additional protections), including the creation of restricted use areas.

The measurement procedure should be in line with the Environmental Measurement Regulation. It is recommended to perform control measurements of environmental noise within one year after the end of the investment. In the event that exceedances of the limit values for sound levels in the environment are demonstrated, the results of the acoustic monitoring will form the basis for a decision on the possible further noise abatement measures.

16. DESCRIPTION OF DIFFICULTIES RESULTING FROM TECHNICAL DEFICIENCIES

During the work on the report, no precise design solutions were available (construction project, work scales). It was based on the data contained in the feasibility study developed and on current information obtained from the Investor (PKP PLK S.A.). For this reason, the analyses carried out were based on general technical assumptions and the experience of experts in carrying out similar tasks. In the absence of data in accordance with the precautionary principle, the most favourable scenarios/assets were adopted to determine the environmental impact of the planned project.

The analysis in the field of the natural environment was based on the data contained in the available literature, scientific and technical journals, as well as documents and legal acts concerning forms of nature protection and did not encounter difficulties that could affect the actual finding of nuisance of the project on the environment. In addition, the results of the natural inventory made available by the Investor and obtained from the RDOŚ in Gdańsk were used.

The best available methods for assessing these hazards, both nationally and internationally (European Union), have been used in the development of environmental issues in the field of acoustic climate hazards. When analysing the ready-made noise spreading model, you should be aware of the errors generated at the various stages of the procedure:

Data errors — traffic data entered into the model is a forecast.

Calculation errors — result from the need to perform calculations using a methodology that does not take into account technological progress.

The uncertainty of the applied calculation method of noise forecasting and the prognostic nature of the input data (e.g., adopted for acoustic calculations of traffic intensity, type of rolling stock) determine the accuracy of the presented acoustic analyses at the level of approx. 1-2 dB.