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## **1. Introduction**

### **1.1 Object and purpose of the paper**

The object of the report is the road project entitled: “The new course of National Road No 1 with the road bridge over the Wisła in Toruń, building the road bridge together with access roads, joining National Road No 1 with National Roads No 15 and No 80“, entered into the list of basic individual projects under number POIiŚ 6.1-33 entitled “ Building the road bridge with access roads in Toruń”.

The purpose of the report is to define the assumed impact of the designed bridge Route on the environment, with a particular impact on NATURA 2000 - the Valley of the Lower Wisła taken into account.

### **1.2 Legal basis, scope of report, description of earlier EIA procedure.**

The scope of the report is based on the provisions of the 3<sup>rd</sup> October 2008 *Act on Making Available the Information on the Environment and its Protection, the Participation of the Public in the Environmental Protection, and on Environmental Impact Assessment (Journal of Laws No 199, item 1227) and furthermore adjusted to the requirements of the Council Directive 85/337/EEC of 27<sup>th</sup> June 1985 on the Environmental Impact Assessment of Some Public and Private Projects and Council Directive 97/11/EC, amending it of 3<sup>rd</sup> March 1997.*

The road project being planned “The new course of National Road No 1 with the Road Bridge over the Wisła in Toruń – stage 1 - Building the Road Bridge together with access roads, joining National Road No 1 with National Roads No 15 and No 80” was prepared in documents between 2006 and 2008. At that time, amongst others, three spatial concepts of the Route were prepared together with analyses, comparing the variants and social consultations. The decision on the location was granted. The report on the Environmental Impact Assessment was drawn up. The decision on the environmental conditions for the consent to implement the project was obtained and the building design was drawn up.

The earlier procedure of the Environmental Impact Assessment was conducted pursuant to the 27<sup>th</sup> April 2001 Environmental Protection Law (Journal of Laws, No 62, item 627, as amended).

Pursuant to this act and the regulations issued based thereon by the Council of Ministers of 9<sup>th</sup> November 2004 on the Definition of Types of Undertakings which could have a Significant Impact on the Environment and Detailed Conditions Related to Projects Eligible for the Environmental Impact Assessment to be Drawn up (Journal of Laws No 257, item 2573), amended by the 10<sup>th</sup> May 2005 Regulations by the Council of Ministers (Journal of Laws No 92 item 769) and the Regulations by the Council of Ministers of 21<sup>st</sup> August 2007 (Journal of Laws No 158, item 1105) the said project was included in the category of those which could have a significant impact on the environment for which the EIA report could be required (§3.1 point 56).

The requirement to draw up an EIA report for the described project was imposed by the Kuyavian and Pomeranian Governor by his decision of 27<sup>th</sup> June 2006 (file number WRR.II.6613/21/06). In the decision issued after an opinion was obtained from the State Sanitary District Inspection Officer in Toruń, and the Department of Environment and Agriculture of the Kuyavian and Pomeranian Governor's Office (the Provincial Nature Conservation Officer), the governor set up a required scope of report, in particular he ordered the report:

- to refer to the impact of the project being planned on natural habitats and plant and animal species for whose conservation the Natura 2000 Area was set up,
- to characterize the current condition of the nature and to assess the changes likely to occur in the period of project implementation and operation,
- to analyse various variants of the project,
- to contain recommendations related to the mitigation of negative effects of the project impact,
- to assess the environmental impact, arising from noise and its impact on the atmospheric air, water and human health.

Furthermore, it was decided in the decision, that the implementation of the investment in the NATURA 2000 Area shall be compatible with the principles defined under art 33-37 of the 16<sup>th</sup> April 2004 *Act on the Conservation of Nature* (Journal of Laws No 92 item 880 as amended).

Pursuant to the EIA report drawn up in 2006/2007, the proceedings were conducted on the Environmental Impact Assessment and completed by the issuance of the decision on the environmental conditions for the consent to implement the project (the decision by the

Kuyavian and Pomeranian Governor No. 20/2007 of 24<sup>th</sup> August 2007 file: WI.II.6613/32/07).

The legal basis to draw up the current (June 2009) Environmental Impact Assessment is made up by the provisions of the new *Act of 3<sup>rd</sup> October 2008 on Making Available the Information on the Environment and its Protection, the Participation of the Public in the Environmental Protection, and the Environmental Impact Assessment* (Journal of Laws No 199, item 1227).

Pursuant to art 88 subparagraph 1 of the above-mentioned Act, the reassessment of the environmental impact is carried out within the proceedings on the issuance of the decision for the building permit at the request of the investor or in the case when the authority proper to issue this decision claims that in the documentation attached to the application, the changes have been introduced when compared with the requirements defined in the decision on the environmental condition.

This report refers to the design solutions, and may be the grounds for reassessment of the environmental impact for the project being planned at the request of the investor so as to make more precise the conditions for the implementation of the project with reference to the requirements defined in the new act. It is so important as the task has been entered into the basic list of the individual projects of the Operating Program Infrastructure and Environment (Program Operacyjny Infrastruktura i Środowisko) under number POIiS 6.1-33.

## **2. Description of the project being planned**

### **2.1 Purpose of bridge building, location variants.**

The purpose for building a new bridge is to improve the traffic between the left and right river banks of the City of Toruń, to remove the transit traffic (National Road No 1) away from the historical Old Town complex, (entered into the UNESCO list), to improve the traffic conditions and to activate economically the eastern part of the City of Toruń, to improve the road traffic with the neighbouring communes, to discharge the existing (the only one in the City) road bridge, which shall facilitate the conduct of its necessary repair.

Within the planned papers, three spatial variants of the location for the new road bridge in Toruń were analysed in the recent years:

- 1) The variant of the bridge location at the level of Waryńskiego Street (“New Bridge Route”)
- 2) The variant of the bridge location at the level of Eastern Street (“Eastern Route”)

- 3) The variant of the bridge location at the level of Okrężna Street (“Western Route”).

The functional and spatial assumptions for variants 1 and 2 contain suggestions to join in one Route solution the traffic needs of the City with the Route of National Roads No. 1 and 15. However, according to Variant three the Route would have mainly a local (municipal) meaning with its possible use to join National Road No 80 with National Road No 15 to Poznań.

For the needs of the functional assessment of the transport system in the City, in the scope of traffic intensity distribution, variant “no” (no bridge) was analysed with a sub-variant to add the third lane to the existing bridge named after Piłsudski.

The functional assessment of the above-mentioned variants for the course of the new Route with the bridge crossing showed that the largest intensity of traffic is in the case of the new bridge being located at the level of Waryńskiego Street (New Bridge/Nowomostowa Route), however, because of larger availability of the area and a fewer number of commercial, spatial and ecological conflicts, the Eastern/Wschodnia Route is an optimum variant. At the stage of the functional and traffic analysis, the variant of Western/Zachodnia Route was rejected because of the decidedly least intense traffic which did not have a large impact and would not discharge the existing bridge named after Piłsudski. In consequence of analyses conducted for the above-mentioned variants, the traffic criteria together with plan, spatial and ecological ones taken into account, the investor selected for the designing stage the variant of Eastern/Wschodnia Route as it would contribute to fewer natural conflicts and would be more prospective for the spatial development of the City. The course of the Eastern/Wschodnia Route is compatible with the findings of “the Study on Conditions and Spatial Lay-out Directions for the City of Toruń” (Resolution No 1032/06 of the Municipal Council of Toruń, of 18<sup>th</sup> May 2006). The location of the Eastern/Wschodnia Route and the analysed variants of bridge crossings are showed on the attached photo map (Attachment 2).

## **2.2 Assumptions for the design**

The design being endorsed covers a section of the new course of National Road No 1 from Wschodnia Street (in the region of Daszyńskiego Square) through the new road bridge over the Wisła to Łódzka Street (in the region of crossing near Lipnowska Street), Attachment 1.

The beginning of the considered road section is in the region of Daszyńskiego Square i.e. the existing crossing of the following streets: Wschodnia, Żółkiewskiego, and Szosa Lubicka. In this area, it is planned to build a large central island to be crossed by the tramway line in the course of Szosa Lubicka Street. Under the crossing, a tunnel is planned to take the designed Route from the bridge towards Wschodnia Street. It is also planned to build a long bridge, joining Żółkiewskiego Street with the exit from the roundabout towards Szosa Lubicka.

Further on, having passed over the area of Winnica Housing Estate, the Route shall cross the River Wisła and the flooded areas on the left bank side, currently taken up by gardens. The whole section in the flooded valley is planned to be crossed by engineering facilities (long bridges, the bridge). From the exit of the tunnel on the right side, the Route runs by a system of long bridges, joining the bridge on the Wisła. The design forecasts building a double-spanned bridge 540 m long, and 40 m high (from the high navigable water level). The bridge has double-spanned system with a length of one span of 270 m where the bearing elements are steel arches joined by braces and a suspended platform/floor. The flooded areas of the left bank side of the Wisła shall be crossed by long bridges up to the region of Rudacka Street. After passing Rudacka Street, the new designed Route goes on the embankment southward between Tłoczyńska Street and Kmicica Street up to Rypińska Street. Having passed Rypińska Street and crossed by a viaduct the existing railway line, it goes through the industrial district in Lipnowska Street to Łódzka Street. The crossing with Łódzka Street was designed in the form of a roundabout with direct exits separated to the right. From Rudacka to Łódzka Street, along the Route, an additional system of local roads was designed to facilitate the traffic in the adjoining areas and connect them with the designed Route. The course of the planned Route is illustrated by the attached map.

The Route, approximately 4100 m long, has been designed in the double-roadway system with two traffic lanes in each direction together with necessary extensions close to crossings. The approximate length of the tunnel (under Daszyńskiego Square) amounts to 120 m and the length of the tramway line in Szosa Lubicka Street which needs to be remodelled is about 600 m.

### **3. Description of the environment natural elements**

#### **3.1 Location, area shaping, hydrography**

The designed section of National Road No 1, with the road bridge over the Wisła, joins the modern part of Toruń in the region of Wschodnia Street (at the level of its crossing with Szosa Lubicka, Żółkiewskiego Streets) with the southern part, in the region of Łódzka/Lipnowska Streets.

In the geomorphological aspect, the area of the investment is located in the Toruń Valley which is a part of the Toruń-Eberswald Proglacial Stream Valley (Kondracki, 1998). The planned Route cuts transversely through the Valley of the Wisła, whose water shaped the current sculpture of the area. On the right bank side of the river, the road designed starts at a level of the high terrace of the Wisła Valley on the ordinates of 62.0 - 65.5 m over sea level. Further on, the Route cuts a high escarpment (about 20 m), which came into being as a result of river erosion. The inclination of the escarpment is significant and it comes up to about 31°. Below, there are flooded areas of the Wisła with numerous old-river beds. On the left bank side of the River Wisła Valley, the road cuts through a 1 km wide belt of flooded plain, partially used as gardens with a network of draining ditches, falling directly to the Wisła. Above Rudacka Street, there are partly forested areas of dune nature.

As to the hydrographic aspect, the area is located directly close to the River Wisła, which in the profile of the designed bridge (km 731 + 430) has a bed about 415 m wide. The remaining surface waters in the region of the project make up a network of draining ditches which drain the left bank flooded plain and old-river beds (the so-called pits) on the right side of the valley below Winnica H.E.

#### **3.2 The flora**

In the area of the designed Route, there prevail poor species of anthropogenic plants (transformed by people): ruderal, ruderal and segetal (abandoned fields), gardens, pastures, sand soils. In the Wisła Valley, there also occur precious habitats like: water habitats in the old-river bed, flooded slimy river banks, riverside herbs and ecotone plants, initial stages of willow and poplar riverside carr, and riverside willow bushes. They are locally ordinary habitats, and they show a capacity to regenerate. The areas threatened by permanent destruction are relatively insignificant. The discussed collections of plants are shaped dynamically and change at every flooding of the lower Wisła over the terraces.

**There are no species from the Attachments of the Habitat Directive (Natura 2000).** The remaining plants belonging to rare, threatened species are mostly locally frequent species of riverside alluvia, which when destroyed grow easily back after each larger flood. Thus, if their stands are destroyed during the building works, they will shortly afterwards be restored on their own. Below, you will find a list of protected, rare, becoming extinct and threatened species which occur in the region of the project being planned.

### **3.3 Location at the background of NATURA 2000 conservation area network**

The designed “ Eastern/Wschodnia Route” cutting through the Wisła in 731.34 km runs through the Important Birds Area PLB040003 **the Valley of the Lower Wisła**, whose borders are made by the river bed together with flooded areas.

The Important Birds Area PLB040003 named the “Valley of the Lower Wisła” is a wildfowl refuge of European importance (E 39). At least 44 species of birds from the Attachment to the Birds Directive and 4 species of the Polish Red Book have been documented as occurring here. Generally, hatching of about 180 species of birds was confirmed. The whole area is a very important refuge for numerous birds, migrating and staying for winter (among others, the White-Tailed Eagle). Furthermore, the area is characterised by a rich fauna of vertebrates, rich flora of vascular plants (about 1350 species) with numerous legally protected and variegated collections of plant species. In the area (near the described terrain), there are natural sanctuaries - Kępa Bazarowa and the River Drwęca (the confluence). The area covers terrains of the lower Wisła between the entrenchments and is subject to anti-flood protection.

On the southern bank of the river, the Route runs in the direct neighbourhood (about 300 m) of the Special Area of Conservation **Forts of Toruń PLH040001** (Fort XV). The Special Area of Habitat Conservation PLH040001 named “Forts in Toruń” - covers a group of old (19<sup>th</sup> century) defence fortifications. The object of conservation is the place of winter hibernation of bats (of which two species from Attachment II of the Habitat Directive). This is a spatially insignificant area limited to the buildings of forts number IV, V, XIII and XV.

The protection of the area consists mainly in the upkeep of the material substance of forts, the protection against a change of their use and the maintenance of facilities being available to bats.

Both areas are in the list of Natura 2000 submitted by Poland to the European Commission and are covered by protection pursuant to the Regulations by the Minister of the Environment of 21<sup>st</sup> July 2004 on the Natura 2000 Important Birds Areas (Journal of Laws No 229, item 2313).

#### **Assessment of natural value**

The most valuable fragments, from natural and landscape point of view, are: the high northern escarpment of the right bank of the Wisła, the flooded valley with numerous old-river beds (on the right bank side) and accumulation terrains with river alluvial soil (on the left bank side), with gardens and forested terrains surrounding Fort XV.

The implementation of the Route shall require minimising the negative impact on the terms of hatching and migration of birds for the conservation of which the NATURA 2000 PLB 040003 area “The Valley of the Lower Wisła” was established and the conditions of wintering and reproduction of bats for the protection of which the NATURA 2000 PLH040001 “Forts in Toruń” (Fort XV) area was established.

#### **4. Description of protected facilities existing in the region of the project pursuant to the Act on the Protection and Care over Historical Monuments**

The designed Route runs eastwards from the centre of Toruń, about 4 km from its historical, medieval Old Town. On principle, the Route avoids facilities of historic-culture importance, however, a relatively near location of the road from two forts which make up a part of the fortification ring of the former Toruń Fortress shall be mentioned. They are, Fort I (named after King Jan III Sobieski) on the northern side, located about 1 km eastwards from the crossing of Szosa Lubicka and Wschodnia Streets, and Fort XV (named after Henryk Dąbrowski) on the south, located about 300 m westwards from the designed Route. The existing area management in the belt adjoining the Route, is related to the Toruń fortress coming into being - the second stage of building between 1887 - 1893 (building of infantry forts, field shelters and traffic Routes). The designed road runs most closely to Fort XV which is, at the same time, a facility covered by nature conservation (Special Area of Conservation of Forts in Toruń PLH040001). The designed Route in the southern section - between the interchange in the place where it crosses Rudacka Street and the interchange in the place where it crosses Łódzka Street - is near Fort XV. Currently, the area taken up by the fort and the defence canons covers the territory between Rypińska and

Lipnowska Streets /from the side of the “neck” barracks and the left “wing”/; the remaining part of the fort in the north is demarcated by a railway line, parallel to it Grzybowa Street and further on in the north, the axis of Rudacka Street (above the bed of the Wisła). A 50 m section of crushed lime road leads to the gate of the triangle fort courtyard, from the fork of Podgórska and Rypińska Streets. The area of fort backyard is closed from the bottom by the line of a former military road, today Okólna Street and forests along the fort belt from the west. From the east, the area in front of the fort is undercut by the sand excavation of the nearby brickyard, and further on a stand of trees of Rudak dunes adapted as forest mask. Below the right wing of the fort, from the south, the open area is limited by Lipnowska, Stara Droga Streets and from the bottom, Łódzka Street. From the north, the in-between area up to the border of the Wisła is deprived of a few elements which were in the fort initially, i.e. J-29, J-30, J-32, M-25, A-24, A-26. The fort facilities are covered by A and B zoning protection. The designed Route cuts in the region of Fort XV the zone of protection B (Attachment 4). The implementation of the project in this area requires being reconciled with the Conservation Officer.

## **5. Definition of anticipated environmental impact in the building stage**

### **5.1 General remarks, method of assessment**

In this chapter, the impact of the designed “Eastern Route” was analysed on individual natural elements of the environment; land surface, surface waters and underground waters, the flora and the fauna, the landscape and the nature conservation areas, as well as the impact on culture values taken into account. Furthermore, the anticipated impact, arising from noise emission and air pollution was assessed together with the impact on human living conditions. The assessment was made based on observations and area research of which the description of the flora and the fauna, the verification of the built-up and area management, and the measurements of the current level of noise intensity, and furthermore, on the grounds of the method of comparative analyses with the use of available papers related to the condition of the environment and the literature data. The impact, arising from noise and air pollution was defined by the method of calculation.

The impact on NATURA 2000 area was assessed on the grounds of information contained in the Standard Data Forms for the Special Areas of conservation and Sites of Community Importance placed on the internet website of the Minister of Environment. The main criteria of valorisation were made up - in accordance with the recommendations of

the Minister of Environment (The methods of project and/or investment programmes impact on the areas of Natura 2000, 2005) - by such factors as: the natural quality of the area, primarily, related to the variety and density of the species of the Community importance, the tenacity or resistance, arising from reception capacity and complexity of the structure, the function of the area related to the refuge, the exchange of the fauna with the neighbouring areas, calm and silence, on which depends the existence of sensitive species.

## **5.2 Impact on terrain shaping**

The designed Route has mostly newly built roads without using the existing sections of roads or municipal streets (with the exception of the initial section in Wschodnia Street and the final section in the region of Lipnowska Street). This means the necessity to mark out and prepare the belt of the road in the area which has been used up to now in another function (gardens, unbuilt terrains, wasteland). The current management of the terrains foreseen for the road is varied which allows separating sections with a distinct natural character and a differentiated landscape physiognomy:

- a fragment of the high terrace of the proglacial Wisła Valley - the beginning of the Route with the area completely transformed as a result of traffic system being built (Daszyńskiego Square),
- the escarpment of the Wisła Valley (with an inclination up to 30°) below which, there are dispersed residential detached houses (Winnica Street),
- the zone of right bank flooded terrace, with the remaining water reservoirs (old-river beds), with the stand of trees of willow and poplar riverside carr; nearer the river, you can find fragments of wasteland meadows and overgrowing fallow land (former arable land),
- the Wisła bed (450 m wide),
- the left bank flooded terrace (up to Rudacka Street) covered from the Wisła bank by a belt of bushes and riverside carr, and then, taken up by a complex of gardens,
- the fragment of the terrace over the flooded land (between Rudacka and Rypińska Streets) - covered by grass and single self-sown pine and alder trees (along the ditch) making up mainly wasteland with rare farm houses,
- the fragment of terrace IV of the proglacial Wisła Valley - a sandy plain variegated by small dunes, with industrial built-up and dispersed detached houses - the terrain

cuts through railway rails and is limited in the south by National Road No 1 (Łódzka Street).

The designed Route, together with the demarcating lines, covers an area which amounts to about 350 K m<sup>2</sup>, of which the road surface makes up about 120 K m<sup>2</sup> (together with the roadways on the engineering facilities and in the tunnel). The direct transformation of the land surface covers a section of the Route in the region of Wschodnia Street, Daszyńskiego Square and Winnica Street on the right bank side and in the region of gardens, Rudacka Street and Rypińska Street on the left bank side of the Wisła.

Building works on the planned Route shall cause a permanent taking up and transformation of the land of about 35 hectares, whereby on long bridge sections, the transformation of the land surface shall be to a lesser degree than on the sections running in the level of the terrain, on embankments or in excavations. From the height profile of the Route, it results that the longest sections shall make up access long bridges up to the bridge (about 1500 m) and the bridge (540 m). The road construction on the long bridge is an advantageous solution from the environmental point of view, as it allows maintaining the passability of the “ecological corridor” of the Wisła Valley.

The largest changes in the area shaping shall be expected in the escarpment of the right bank of the Wisła Valley. A significant interference with the escarpment is foreseen as a result of supports for the long bridges and tunnels under Daszyńskiego Square to be built so as to join the Route with the road system in the region of interchange of “Lubicka Street” which takes out the “Eastern Route” (Trasa Wschodnia) towards the north (Wschodnia Street). The 120 m long tunnel separated by an open excavation (56 m) cuts through the escarpment of the right bank at a depth of about 8 m.

### **5.3 Route building works impact on the landscape and culture environment**

The impact of the planned Eastern Route (Trasa Wschodnia) building works on the landscape and panorama of the City shall be significant and in the variant of the single-spanned arch bridge even very significant. The bridge structure with a maximum height of 80 m and the span of 485 m (with long bridges of about 2 km) over the River Wisła Valley shall make up a *sui generis* gate (visiting card) of the City from the eastern side. The visualisation of a similar solution made for the so-called “New Bridge Route” (Trasa Nowomostowa) at the level of Waryńskiego Street showed that the bridge of such a structure (arch single-spanned) shall make up a distinct dominant in the landscape and change completely the panorama of the City, as seen from the eastern and southern side.

Among others, for this reason, a double-spanned bridge 540 m long (2 x 270 m) with a maximum height of 40 m has been selected for the stage of designing and implementation. Its impact on the landscape shall be significantly smaller and the double-spanned structure of the arch bridge shall allude to two bridges existing in Toruń: the road and the railway ones.

In the southern part, the designed Route runs in the direct neighbourhood of Fort XV, located at the distance of over 3 km from the established centre of the fort ring. The designed Route runs at a distance of about 300 m from the border of A zone of Fort conservation. Because of its distance from the compact City built-up and its suburbs, the project shall not have a large impact on the culture environment. During the implementation, a particular attention shall be attracted to - primarily on the southern bank of the Wisła - the detailed scope of conservation of the fort belt terrains in the spatial layout plan being in force. The designed traffic solutions do not interfere directly with the areas covered by the A zone conservation (within the plots of the facilities), but they may disturb indirectly, not built-up B conservation zones - (the area of the fort belt) of the 19<sup>th</sup> century fortifications. In consequence, the implementation of the project shall be carried out in a close co-operation with the Conservation Officer.

In the case any artefacts of historical importance are uncovered while implementing the investment, the works shall be immediately suspended, the finding shall be secured, and the archaeological supervision of the Provincial Office of Historical Buildings Protection shall be immediately notified.

#### **5.4 Impact on surface and underground waters**

Each bridge crossing over a river, when supported on a pillar structure located on the valley bed, causes disturbance and changes the conditions of water flow. This is related to the reduction in the hydraulic cross-section of the river bed by pillars and bridge supports. Building works on a bridge crossing create hazards of changes in the Wisła bed processes, and by the same, in the hydrological regime, in the case of interference into the transversal profile of the bed.

The variant of single spanned bridge with pillars on the bank of the bed selected for the implementation has the least impact on the river environment. However, in this variant, there may be an important impact of the building works. Assessing the project, it was claimed that building works shall not cause a significant disturbance of the flow, as the central location of the support shall not cover the main stream of the river, and during the

works, no temporary structures shall be applied (building and assembly works shall be carried out with the use of watercrafts).

The construction of the double-spanned bridge, according to the selected variant, shall cause an interference with the Wisła bed (one pillar in the stream and two pillars on the river banks) through a limitation of the cross-section for the mean water (36.00 m above sea level) in the limits ranging from 5 to 6 %. It needs emphasising that the project of the bridge minimises the impact of the central support building works on the water flow and on the bed processes, owing to an island under this support in accordance with the river stream.

The construction of access long bridges is a solution sufficiently securing the flows of large water in the valley, whereby the strengthened construction of the supports shall be taken into account (in the same way as for the bridge crossing).

For the designed Route, a total taking over of storm water running off the road belt was anticipated, together with facilities which make it possible to treat it until the parameters established in the appropriate detailed provisions are met (Journal of Laws No 137 of 2006, item 984, as amended).

The impact on the underground waters; it results from the hydrogeological data, that on the designed Route, the Quarternary water bearing level has no natural insulation and is liable to pollution, permeating the surface of the area. No important impact of the bridge and long bridges building works is foreseen on underground water in the valley, as its level is shaped, depending upon the level of the River Wisła. We may anticipate that during the Route building works, there will be periodical changes in the land and water conditions in the belt covered by earth works, and as a result of piling works for the supports for long bridges, there will be interference into the first water bearing level. In the zone of piling, there is one Quarternary water bearing level, and that is why there is no hazard of drilling through insulation layers nor of joining water of various levels.

It is evaluated that the operation of the designed Eastern Route/Trasa Wschodnia shall have no impact on the level of resources, and quality, as well as, usable water of the Quarternary level. This water is operated only in the area of gardens at Rudacka Street and in individual farm wells located in the Rudak District.

Building road works through flooded areas of the Wisła Valley on the long bridge shall not cause lifting of flood water nor shall it cause an increase in the river erosion.

## 5.5 Anticipated impact on soil

The impact of the designed Route implementation on soil may be divided into two main categories:

- direct changes (while building) consisting in road belt of a defined land surface, being taken up and the removal of humus soil, the destruction of soil structure, the change in the conditions of soil infiltration,
- indirect changes and impact (while operating the road) which consist in: a gradual pollution of the soil with metal compounds and petrol derivative substance, acidification with sulphur and nitrogen compounds, salting with winter agents to maintain roads, change in the water relations (in the belt which adjoins the road).

In the demarcating lines, the designed Route covers the surface which amounts to about 350 K m<sup>2</sup>, of which roadway surface makes up about 120 K m<sup>2</sup> (together with roadways on engineering facilities and in tunnels). The direct transformation of the land surface (soils included) shall cover a Route section in the region of Winnica Street on the right bank and in the region of gardens in Rudacka Street and farm land in the region of Rypińska on the left bank of the Wisła.

In the belt where the investment is to be implemented, there is soil of quality classes: III, IV, V and VI, whereby, on the flooded section (on the both River Wisła banks) alluvial soil and organic soil (class III - IV) dominate, and on the higher terraces of the valley, there is poor soil on sand substrate (class V and VI).

While implementing the planned project, the belt of soil shall be destroyed not only under the new roadways, embankments and long bridges supports, but also on some surfaces of temporary access roads, yards, warehouses and working car parks.

In the stage of building works, one of the most crucial impact on soil, apart from the removal of humus soil in the belt of the new road, is the change in the water relations in the soil. This has not a larger importance for sandy degraded wasteland. However, waterlogged peat earth and peat type soil and partly alluvial soil shall have to be drained, which may accelerate its degradation. The destruction of the plant cover on sands shall cause intensified processes of soil wind erosion.

Some part of soil shall be polluted during building works. Traffic pollution during the building works and operation of the Route shall have an adverse impact (in particular on biotic elements of soil) at a distance even up to 100 meters from the road.

## 5.6 Foreseen changes in the flora

In the area of the designed Route, there prevails anthropogenic vegetation (changed by the man): ruderal, ruderal and segetal (abandoned fields), gardens, pastures, sand. In the Natura 2000 area (flooded terrace of the Wisła Valley) there occur habitats important to the Communities (EU), such as:

- a) water reservoirs in old-river bed
- b) slimy banks of rivers being flooded
- c) riverside and ecotone herbs
- d) (initial phases) of willow and poplar riverside carr and riverside willowy thickets.

The mentioned habitats have an initial character, they are locally ordinary, and they are characterised by a large potential to regenerate, whereas the surfaces threatened by a permanent destruction are relatively small. The discussed collections are shaped on the lower part of flooded terrace, dynamically changing at each flooding of the Wisła.

In the region of the planned project, the occurrence of 45 species of plants, 6 under complete, 9 under partial conservation (with the exception of yellow everlasting and feral lily of the valley, all out of the Route) have been ascertained. Of other species, in the Route, there occur the Black Poplar and the Burr Clover. The detailed flora inventory for the Route is contained in a separate paper.

**There occur no species from the Attachments to the Habitat (Natura 2000) Directive.** The remaining rare and threatened plants are mostly locally frequent species of riverside alluvia, destroyed and easily regenerating after each larger flooding. Thus, if their stands are destroyed while building works, they can regenerate quickly on their own.

Building works on the Route and bridge shall not have an adverse impact on water and rush vegetation. Herbs, grass and grass thicket of alluvial terrain regenerate very quickly and in the belts destroyed by building works, at a distance of more than 30 to 50 m from the bridge, they will regenerate after a few to a dozen or so years. Their species of foreign origin shall prevail which shows high expansion in our river valleys, also in cases where there are no changes in the environment. Herbs are mostly created by the Giant Goldenrod, and the thicket by Box Elder. Poor sand and ruderal vegetation at a distance of a dozen or a few tens meters outside the foot of embankments and excavations edges (if the terrain is not managed in another way than earlier) shall regenerate after an equally short period of time.

At the bridge itself, the herb thicket, grass and alluvial terrain thicket shall get more shade and fall of various types of pollution. However, the conditions under the bridge shall be distinctly different - much more shaded (which is not a large problem for plants of thicket and herbs) and, in particular, important fall shade - which may be noticed in the case of both municipal bridges - under the narrow railway bridge of high spans it has no importance, however, it is distinct under the road bridge, where the vegetation is very poor in places.

The foot of the embankment shall be enriched by flowing water, bringing fertilising sediment, which shall contribute to a more abundant development of greenery. There will be grass with the predominant rootstock grasses - the Wood Small-reed, the Spear Grass, the Brome Grasses, and in more humid places the Giant Goldenrod or Tansy shall govern, gradually trees will start to self seed with the Box Elder prevailing. The draining activity of excavations shall have a negative impact on larger trees which have grown in different air - water conditions in the soil, this will weaken the growth of young trees and bushes. This shall not have an impact on herb vegetation, which has never been able to use deeply lying groundwater.

The existing stand of trees which fulfils the role of soil and water protection for the Rudak and Stawki Housing Estates shall have to be partly removed. The existence of other nearby trees shall be threatened mostly as the result of the change in water relations to which older and hygrophil species (for instance alder) are more sensitive. In consequence of the Route building works, about 360 trees and bush groups shall be felled off.

The protected xerothermal species (species resistant to lack of humidity) on dry grass meadows have rather rare stands in the examined Route, apart from the fact that they commonly occur in the Toruń Valley, and there is no need to transfer them.

In semi-natural and spontaneous grass areas, following the pollution, a process of synanthropisation shall occur, consisting in spreading of little demanding ruderal plants (weed), humid habitats shall be overdried, and dry and barren habitats shall become fertilized and in this way, they will lose their characteristic properties which, in consequence, shall cause a unification and pauperisation of the flora.

The impact of alluvial terrains on the vegetation shall be compensated by their natural fertility and nivelated by periodical floods. In consequence of an increase in the level of pollution, growing of vegetables and fruit in gardens shall have to be limited.

In the zone of the planned Eastern Route impact, some undertakings shall be necessary to reduce the adverse impact of building works and operation on the nature. Planting of

various species of trees and bushes in compliance with the habitat shall be necessary. On barren sand this will require additional costs caused by the necessity to start anti-erosion undertakings.

It results from the assessment carried out that building works of “Eastern Route” (Trasa Wschodnia) and its operation shall collide with the values of the current natural environment of this part of Toruń, however, the impact shall not be excessively large and the changes anticipated can be annulled in consequence of a significant capacity of the habitats occurring to regenerate. During the implementation of the Route, consultations of designed activities with naturalists shall be necessary.

## **6. Impact of the Route building works and functioning on the cohesion and natural values of NATURA 2000 areas**

The Route designed, cutting through the River Wisła on km 731.34 runs through the Important Birds Area NATURA 2000 – PLB040003 “The Valley of the Lower Wisła”, whose borders are marked out by the river bed together with the flooded areas. On the south bank of the river, the Route runs in the direct neighbourhood (about 300 m) of the Special Area of Habitat Conservation PLH040001 – Forts in Toruń. Both are on the list of Natura 2000 areas submitted by Poland to the European Commission.

The Wisła Valley, in spite of a significant degradation of a part of its sections, is still a very important ecological corridor. During bird flights, it gathers many species of birds in the places of feeding and resting on water. The fauna of the analysed area is made up by numerous bird species for the protection of which the NATURA 2000 was established in the Valley of the Wisła, and in addition: the ichthiofauna of fish which live in the water of the Wisła, those migrating towards the Drwęca: double-environment species of salmon-like fish (trout, stream trout), amphibians (5 species), including: the European Toad, Common Spadefoot, Common Frog, Pool Frog and Edible Frog.

The Wisła Valley is an important environment for water fowl wintering. At the Wisła section between Włocławek and Nowe, about 20 water species of birds spend the winter.

The mammals of the described area are: Eastern European Hedgehog, Mole, Common Shrew, Squirrel, Common Rat, House Mouse, Bank Vole, Field Mouse, Northern Vole and Common Vole. Larger mammals are Fox, Raccoon and Beech Marten. They live on both river banks, in the flooded zone and in the area of settlements, trees and bushes.

The most threatened species of mammals, living in the impact zone of the Route are bats. During the whole year, there occur 7 species: the Serotine, the Daubenton’s Bat,

Greater Mouth Bat, the Common Noctula, Nathusius' Pipistrelle, Common Pipistrelle and Common Long-Eared Bat. The place to acquire food is a mosaic of riverside environments. It is also there, where they find day hiding places and probable places for reproduction. For the period of winter, they go to the nearby forts, where they find convenient hiding places for hibernation. The list of species of bats hibernating in the forts is supplemented by other species, which come from the eastern terrains of Europe. In fort XV, the Barbastelle and the Greater Mouth Ear Bat winter regularly.

The impact caused by both building works and the functioning of the new road bridge over the Wisła in Toruń, on the fauna of bats in Fort XV, covered by conservation within PLH40001 "Forts in Toruń", shall be of little significance and does not disqualify the project. We may deem it that it is admissible and its impact on the protection of this wild life refuge is not important. The integrity of this area is not threatened either – the project shall not cause: a reduction in the number of their population, a loss and fragmentation of bat species habitats which are the object of protection in the refuge. No worsening of the status of bat conservation in the refuge is likely to occur.

The analysis of the environmental impact of the designed Eastern Route (Trasa Wschodnia) on the mentioned NATURA 2000 areas, conducted within the report allows to claim that the impact shall not be significant as the investment shall not limit the continuity of the ecological corridor of the Wisła Valley in a manner which makes impossible the migration of the species of fauna occurring here, nor shall it cause a significant fragmentation of habitats or irreparable changes in the flora species composition. The most valuable fragments of the Wisła Valley are crossed by the long bridge which shall ensure the preservation of the living and reproducing habitats of water and land species.

## **7. Analysis of necessary preventive measures to reduce or compensate the adverse environmental impact**

The location of the planned road project in an area of high natural environment values (NATURA 2000) and significant culture and landscape values (Fort XV) has it that the basic recommendations intended to avoid threats and to mitigate adverse impact refer to significant fragments of the Route, in particular to the section which crosses the flooded part of the Wisła Valley.

For the whole course of the Route, the following general recommendations shall be adopted:

- 1) the road belt shall be drained pursuant to the design and the water permit being granted, in a manner which ensures collection and treatment of storm water running off the roadway and pavements, as well as, hardened roadside in accordance with the requirements of detailed legal provisions (list of legal provisions),
- 2) the scope of tree felling off shall be limited to a necessary minimum (pursuant to a verified inventory - taking documentation),
- 3) earth works shall be conducted in a manner which ensures a limitation to the working belt,
- 4) the layer of humus soil shall be deposited and used for land reclamation after the completion of building works,
- 5) building and hydrotechnical works (building the central support with an inland) with the use of watercraft shall be carried out between the periods of double-environment fish migration,
- 6) the back-up for the building site of the Route shall be organised out of the NATURA 2000 area,
- 7) building timetable may be set up in such a manner that the main earth works shall be carried out off the vegetation period, the reproduction period of amphibians and the hatching period of birds.

The natural conditions, which occur in the separated sections of the road, taken into account, it is recommended to formulate the following particular guidelines:

- 1) in the zone of the escarpment of the River Wisła Valley, on the right bank side - the protection (retain wall) shall be made as foreseen in the design to allow to stabilise the land in the region of the Route exit from the tunnel),
- 2) in the section of the flooded terrace of the right bank side, it is recommended:
  - while building the long bridge supports, the preservation of water reservoirs shall be ensured (old-river bed) against drying up (protection of amphibians' reproduction),
  - the interference with the water reservoir on the eastern bank side (supports No 7 and 8) does not require a surface compensation, however, it requires the strengthening of the separating dyke and banks,
- 3) on the bridge section over the River Wisła:

- building works shall be conducted in the period of mean and low water levels, during building works, the flow shall be limited to the least possible extent – the design does not foresee the application of any temporary constructions in the stream of the river: the works at the central support shall be carried out with the use of some watercraft,
  - the strengthening of banks in the bridge profile (in particular on the right bank) shall be foreseen – **the design anticipates the construction of retain walls on the right bank side,**
- 4) in the section of the flooded terrace of the left bank:
- limit the interference of the road building working belt to a minimum on the adjoining land of gardens,
  - ensure the flowability of the ditch (A) – **the design foresees the remodelling of the ditch at a section of 167 m, in the form of a covered channel of a diameter of 1.0 m, which shall ensure the flowability and good conditions of flow.**
- 5) in the section from Rudacka Street to Rypińska Street – recommendations similar to the whole Route, and furthermore, it is necessary to make acoustic screens, according to the recommendations contained under point 8.2,
- 6) in the section from Rypińska Street to Łódzka Street:
- recommendations as for the whole Route, and furthermore, it is necessary to apply acoustic screens according to the guidelines contained in point 8.2,
  - a particular attention shall be paid to the location of the building site back-up and access roads at a minimum distance of 150 m from the border of the bat refuge (fort XV)
  - limitation of the speed of vehicles on the left bank section of the Route (from Rudacka Street to the railway viaduct) to 50 km/h
  - elimination of the adverse impact of the Route illumination on the bat fauna through the application of bulbs of low emission of ultraviolet radiation
  - new trees to be planted along the Route within the greenery design shall not collide with the necessary actions to preserve the refuge of bats as they do not cover the Route section in the region of Fort XV.

The implementation of the project does not require compensating actions.

## 8. Impact related to the operation of the Route

### 8.1 Impact on the level of air pollution

#### Guidelines assumed for the analysis

As to the intensity of vehicle traffic, the designed Route may be divided into three sections. The first section makes up the existing fragment from Wschodnia Street to Daszyńskiego Square of a distance of about 600 m, a road section from Daszyńskiego Square to Rypińska Street (the bridge and long bridges) of a length of about 2500 m and the third from Rypińska Street to Łódzka Street of a length of about 1000 m. The forecast intensity of traffic for the year 2023 in vehicles per 24 hours for the individual sections is as follows:

section number	year 2023 vehicles per 24 hours
I	39 899
II	30 340
III	25 020

Section I makes up the northern part of the Route which runs through the detached houses (PZWANN Housing Estate) and industrial and service built-up (a garage, a petrol station, a wholesale): section II runs in the neighbourhood of the industrial built-up (Toruń-Pacific Factory) and cuts through the escarpment, below which there is a single built-up of detached houses (Winnica Street). Further on, the Route runs across the Valley of the River Wisła behind which it passes through flooded terrains with gardens. Section III cuts through Rudak District, to a large extent undeveloped, however, with developing detached houses and the existent industrial built-up in the region of Lipnowska Street.

The first section shall run partly in the lowering of an open tunnel; the second section shall be over the terrain level on the viaduct and on the bridge, the last fragment shall run at the level of the terrain and on a small embankment. The parameter of traffic pollution raising was taken into account as  $h=10$  m.

To calculate the emission, vehicle traffic intensity was adopted as:

Section	Day time	Night time
Section I	2169	648
Section II	1650	493
Section III	1360	406

The assumptions related to the structure of the traffic:

Participation of heavy vehicles (trucks)	- 8 %
Participation of cars	- 92 %, of which:
- cars with spark ignition	48 %
- cars with self ignition	52 %

The mean speed of vehicles was assumed according to the design data as 70 km/h.

In the report, the range of the impact zone for basic traffic pollution was defined with the help of model calculations which allow for an approximate establishing of the range of noxiousness. The basis for calculations were the data on the targeted years of 2023 and 2033 intensity and structure of vehicle traffic and ratios of emission related to basic pollution broken down into cars and trucks. Calculations for the 2033 forecast were omitted as it is difficult to foresee the changes in the emission of waste gas from cars in the following dozen or so years. There are no forecasts related, among others, to changes in the quality of fuel, per cent share of vehicles with electric drive. The noticed tendencies of changes are oriented towards the reduction of combustion engine emission, and therefore, we may expect an improvement in the situation with reference to the forecast values.

As a result of the calculation analysis, it was found out that:

- The maximum values calculated for the condition in 2023 in the terrain out of 40 m road belt shall not exceed the reference value in all ratios.
- The annual mean values for 2023 shall be maintained in all ratios.

All calculations make up a computer simulation, with the assumption of the current parameters of fuel burning in engines. The visible engineering progress in the reduction of pollution emission and larger and larger per cent of gas fuel vehicles contribute to a lowering of emission volume, and therefore, we may assume that the forecast volume of pollution emission is overvalued.

The designed Route shall run in a prevailing section through non-urbanised terrains – the bridge, the riverside terrains, as well as, those not covered by landscape protection. Only on a section of 500 m is the built-up of detached houses compact. In its neighbourhood, there run three very busy streets and the increase in pollution related to the Route building at this section shall be insignificant. Therefore, there will occur no conflicts related to the noxiousness caused by the emission of waste gas from moving vehicles.

## 8.2 Acoustic impact assessment

### Assumptions adopted for the assessment

The assessment related to the Route from its beginning at the height of Wschodnia Street by Daszyńskiego Square to the end at the junction with Łódzka Street. In the target status i.e. double-roadways Route with two traffic lanes in each direction, 3.5m wide each roadway lane and with a separated belt 3-7m wide. It was adopted for calculation that the traffic shall be spread on the whole width of the road-lanes and this has no impact on the summary result of calculations related to the propagation of noise from the whole section of the Route.

Pursuant to the forecast of the road traffic for 2023, the intensity level was adopted for the traffic as 39,899 vehicles/24h with the participation of heavy vehicles correspondingly 8% for Wschodnia Street, 30,340 vehicles/24h for the section from Daszyńskiego Square to Rypińska Street, and 25,020 vehicles/24h with the participation of heavy vehicles for the section from Rypińska Street to Łódzka Street. As the Route on the endorsed section shall have one interchange located in the region of crossing with Rypińska Street, in the calculations, it was divided in two sections with varied but permanent intensity of traffic. The section of Wschodnia Street, with “Lubicka” interchange was treated separately.

The designed speed for straight line sections, running through the built-up was assumed as 70 km/h with the exception of the entry into Łódzka Street, where the speed was reduced down to 50 km/h. For the first section, the drop towards the south was taken into account. No amendments were made for the reflection from elevation, design facades and absorption by dense greenery. In the Route of the designed course, there is no compact built-up which could have a heavy influence on sound reflection.

From the analysis of the anticipated acoustic impact on the designed Route conducted within the report, it was established that:

- The designed traffic Route, similarly to any other Route shall cause a worsening of the acoustic situation in the region of its location, compared to the existent condition.
- The foreseen range of the impact over the standard amounts to about 100m from road axis for daytime and 180m for night time in the areas with dispersed built-up. In the case of terrains intensely urbanised, the impact range is limited to the first line of built-up.

- The results of calculations refer to the intensity of vehicles traffic, its structure and foreseen speed assumed by the designer of the Route.
- In the calculations, no changes in time in the noise of vehicles were adopted. The earlier experience showed that in the period of five years, there is a reduction in the level of the sound by 1 dB. Assuming a further drop in the period of the forecast, an amendment of - 2dB shall be adopted.
- On the whole section of the designed Route, the threshold value shall not be exceeded.

#### Acoustic protection:

In the targeted status of Route solutions, a need to apply acoustic protection (screens) on indicated sections is foreseen:

- Left bank side (L) hm 0+80,84 to 0+298,82, height 4m
- Left bank side (L) hm 0+281,7 to 0+512,29, height 5,5m
- Left bank side (L) northern roadway through the Daszyńskiego Square hm 0+234,66 to 0+ 631,93, height 4m
- Right bank side (P) hm 2+570,52 to 3+076,56, height from 1 to 4 m (exit from the embankment) screen height up to 4 m above the terrain level.
- Right bank side (P) hm 3+386,45 to 3+583,78, height from 1,5 to 3,5 m

Because of relatively insignificant scale of the foreseen excess and, at the same time, important natural values of the terrain, it is suggested to apply absorbing screens with the anticipation of greenery for the terrains located in the section from the bridge to Łódzka Street. From the side of residential built-up, they shall be supplemented by a row of greenery which fulfils masking functions. For the solutions in the region of Szosa Lubicka Street interchange, there may be reflection screens partly with clearances; consultations of the screen appearance with the residents of PZWN Housing Estate are recommended.

As the designed Route runs in a significant part through terrains currently undeveloped, it is necessary to introduce corresponding entries related to admissible forms of area management for the land located along the Route so as to avoid future conflicts. It is suggested to limit the new residential built-up in the belt up to 150m from the road axis. In the first line of built-up, service and warehouse buildings shall be located.

## **9. Impact of eastern Route operation on human health and living conditions**

The construction and then, operation of the Route being subject to the opinion shall have an obvious impact on the living conditions and health of Toruń inhabitants. This impact shall have both positive and negative aspects, depending upon the location of the residential built-up in relation to the course of the new road:

- On the one hand, there will be an improvement in the safety and living conditions of these inhabitants of the centre of the City who are exposed to the adverse impact of noise and waste gas, arising from vehicles passing through the only bridge in Toruń.
- On the other hand, there will be a significant worsening of hitherto very good air-sanitary and acoustic conditions in the region where the new Route runs through weakly built-up peripheral areas of the City (with the exception of the beginning of the Route in the region of Wschodnia Street and Daszyńskiego Square where a very large traffic intensity generates already currently a noise exceeding the standard).

It is estimated that the number of City inhabitants' potentially exposed to a worsening of their life comfort in the region of the new course of National Road No 1 includes about 300 people (in the residential buildings currently existing in the zone of anticipated Route impact without users of gardens).

The current impact of the existing traffic Routes on the health of residents living in adjoining terrains is not known, and that is why the evaluation of the impact of the designed Route construction on human health may have an exclusively relative nature, based on general factors for the traffic pollution impact. The literature data indicate that it is extremely difficult to distinguish diseases caused by traffic pollution emission from the general number of diseases caused by environmental pollution. The more so that the impact of traffic emission on human health may be revealed only after a few or even a dozen or so years.

The direct impact of the traffic Route functioning on human health relates, in particular, to noise emission. According to the literature data, the noise emission at a level which does not exceed 40 dB is not harmful to the health. The noise of a level ranging from 40 to 70 dB has an adverse impact on the organism, causing the tiredness of the nervous system, reduction in the sensitivity of eye-sight, makes communication more

difficult; has an adverse impact on sleeping and relaxation. A permanent exposure to noise over 70 dB (A) has an adverse impact on work capacity and acts harmfully on health.

It results from the analysis presented in the report that in some sections, the designed Route shall cause an increase in sound intensity up to a level of 68-73 dB which shall be qualified as noxious impact on health, adversely influencing human living conditions.

The importance of the Route impact on health and living conditions of people residing in the nearest located buildings taken into account, such solutions shall be applied which would minimise the adverse impact of the Route's functioning. The suggested methods and directions of health protection and human rights conditions are as follows:

- 1) to apply technical acoustic protection for the terrains exposed to noise exceeding the standard (in sections indicated in chapter 6.2),
- 2) to design non-collision crossings (improved security),
- 3) to introduce insulation greenery belts on sections neighbouring with the terrains of residential built-up,
- 4) to eliminate a new residential built-up in the belt up to 150m from the Route axis.

## **10. Impact of the Route building works and functioning on culture values and resources of the area**

The course of the designed Route in the southern part runs in the direct neighbourhood of Fort XV located at a distance of over 3 km from the centre of the demarcated fort ring. Currently, the area taken up by the fort and the defence canons which accompanied it originally is between Rypińska and Lipnowska Streets (from the so-called neck barracks and the left arm: the remaining fort area from the north is limited by a railway line parallel to Grzybowa Street and further in the north the axis of Rudacka Street (above; the Wisła bed). From Podgórska and Rypińska Streets about 50m long section of the road of crushed lime stones leads to the triangle entrance yard of the fort. The area behind the fort is closed at the bottom by the line of the former military road, today, Okólna Street, and the forests along the fort belt in the west. In the south, below the right arm of the fort, there is an open area limited by Lipnowska, Stara Droga and at the bottom Łódzka Streets.

Currently, no archaeological sites are known as documented in the Route of the designed road. Apart from the range of the designed investment, at the eastern front of Fort XV, there is site No 300 – traces of settlement from the early bronze epoch (AZP 40-44, Toruń site 300).

The project/design because of being away from the compact City and suburb built-up shall not influence to a large extent the culture environment. While implementing it, attention shall be paid, first of all, to the southern bank of the Wisła – to a particular scope of conservation for the areas of fort belt in the Spatial Layout Plan being in force.

The implementation of the project does not require drawing up of a separate plan which would contain elements to limit the adverse impact on threatened culture assets.

## **11. Analysis whether the threatened culture assets located within the project shall have a report drawn up to limit the adverse impact at the stage of building works and operation**

It results from the assessment contained in the previous chapter that the designed road project does not cover by its range the direct impact on the analysed material culture facilities (of Fort I and Fort XV). However, as the Route runs in the so called “B” protection zone of the 19<sup>th</sup> century fortification belt of Toruń, any intentions interfering with this, require being reconciled with the Provincial Monument Conservation Officer.

A particular attention shall be drawn to the maintenance of the system of Fort XV moat supply with water which has importance not only for the maintenance of the spatial structure of the facility, but also to keep up micro-climatic conditions necessary directly for the habitat of these species of fauna (bats) for which the object was entered into the Natura 2000 List of Areas.

The designed traffic solution does not interfere directly with the areas covered by zone A of conservation (within the borders of plots of land), but may damage indirectly unbuilt-up B conservation zones (the area of fort belt) of the 19<sup>th</sup> century fortifications. In consequence, the project shall be implemented in close cooperation with the Conservation Officer’s services. This investment does not require drawing up separate programmes to limit the adverse impact as the project impact is assessed as insignificant. In the case, monumental artefacts are uncovered while implementing the project, works shall be stopped at that place, the artefact protected and the archaeological supervision of the Provincial Monument Conservation Office shall be immediately notified.

According to the recommendations of the Municipal Monument Conservation Officer, the buildings at 54 Żółkiewskiego Street, and at 3 Lipnowska Street required drawing up of the so-called inventory white cards before tearing them off which were drawn up by the investor.

## **12. Assessment of the necessity to establish an area of limited use**

The traffic Route belongs to these categories of undertakings for which in accordance with art 135.1 of the *Act on the Environmental Protection* it is possible to apply the requirement to establish the limited use area in the situation when the environmental quality standards cannot be maintained with the use of technical or organisational methods. In the case of the Route, at the current state of concept, there is no necessity to demarcate a limited use area as the excess of the admitted noise standards shown by calculation which occurs in some sections, may be eliminated by the technical methods. The places and manners to limit the noise emission defined under Chapter 6.2 were taken into account in the building design. However, if the "as is" assessment shows by measurements - despite of the application of technical solutions an excess in the admitted level of noise then, the determination of limited use shall be necessary.

The elimination of social conflicts taken into account, it is suggested to introduce into the Spatial Layout Plan for this part of the City a limitation of the residential function (prohibition of a new built-up) in the belt up to 150m from the road axis (on both sides).

## **13. Analysis of potential social conflicts**

The construction of Eastern Route, joining the northern and southern parts of Toruń shall have an obvious impact on the worsening of life conditions for these inhabitants of the City whose houses are located nearest the designed road. This impact shall have a differentiated scale and nature, depending upon the section. On the whole length of the itinerary, a worsening of acoustic and air sanitary conditions shall take place, whereby at the section between Podgórska, Rypińska and Łódzka Streets and also in the region of the planned crossing of Łódzka Street/Włocławska Street (in IA variant) the excess of the standard may come up to 5,9 d(BA) and reach as far as 100-150 m away from the road axis. A change in the living conditions in these regions shall be little noticeable as currently the acoustic background is at the level below 50 db(A) for daytime and below 40 db(A) at night which is defined as "a full acoustic comfort" (with the exception of the areas in Łódzka Street. Similarly, an adverse change in the conditions may be expected by the users of recreation terrain (gardens) located north of Rudacka Street and on the opposite bank of the Wisła, by the residents of some houses in Winnica Street, which up to now, had been shadowed by the Wisła escarpment, sheltering them from significant traffic noise occurring in Szosa Lubicka Street. It needs emphasizing that in the prospects, the

construction of the further section of the road along Wschodnia Street, and the remodelling of Daszyńskiego Square interchange shall cause an increase in the level of emitted noise and a worsening of the living conditions for the residents of detached-houses of PZWANN Housing Estate.

From the point of view of public reception, the most important elements for the assessment of the undertaking are:

- The designation of the investment - in this aspect the public reception is not unambiguous – we may suppose that most residents of the City look forward to the second road bridge and support the construction of the new Route, however the residents of the regions exposed to living conditions worsening shall be against it.
- The organisation of the building site and site mobilisation – the public reception shall depend exclusively upon the contractor – there may be conflicts in the case of, for instance, lack of passage for pedestrians, no proper protection of excavations, wrongly demarcated diversions, etc.
- The noxiousness of building works caused by the operation of technical equipment (noise, vibrations, waste gas, dust) may cause protests and complaints of residents from houses located nearest the designed road.
- The time of task implementation – efficient and as short as possible construction works shall reduce the risk of conflicts and improve the social reception – no breaks in the begun works shall be allowed.
- The scope of works – limitation of the scope of works to the necessary minimum for instance limitation of trees felling off, care for the maintenance of the surroundings, for the terrain of gardens may have an advantageous reception, and the investor may be positively appreciated.

The findings of this report taken into account, it is evaluated that the planned traffic Route may be criticised by the residents of houses located in the first line of built-up in Wschodnia Street, in the region of crossing Szosa Lubicka Street (Kalinowa and Świerkowa Streets), some gardeners in Rudacka Street, gardeners in Rypińska Street, residents of the newly built detached-houses district between Rudacka, Kmicica and Otłoczyńska Streets, whose houses are located in the belt of investment implementation or in the zone of its impact.

We may assume that the social fears shall relate not to the anticipated ecological adverse impact related to an increase in the traffic intensity and emission of pollution, but

rather to a worsening of living comfort and safety conditions, and a loss of a part of recreation terrains (gardens).

The investor fulfilled all the requirements of the legal procedure related to the real estates purchase and taking over for the purpose of the Route construction. In total 82 expropriation proceedings were conducted of which most were concluded by a settlement of the parties. Particularly important from the public point of view was the expropriation of 202 gardens. From this number, there was only one case of conflict whose solution will require a further administrative procedure.

**To avoid potential public conflict at the stage of Route operation, the acoustic screen indicated in the report shall be made and control measurements of “as is” analysis shall be conducted.**

#### **14. Requirements related to environmental monitoring**

The designed road investment requires, while building and then while operating, to have a monitoring of the impact scale together with the range and changes arising in the natural environment. It is the opinion of the authors of the report, that the monitoring shall cover:

##### **I. In the stage of building:**

- Observation of the Wisła and escarpment stability on the right bank side (Winnica Housing Estate) and recording of possible sliding processes and other erosion changes.
- Observation of water changes in old-river beds reservoirs (Winnica Housing Estate) and the level of ground water in the flooded zone of the Wisła Valley (Rudacka, Rypińska Streets and Fort XV)
- Observation of all changes occurring in the zone of Wisła banks and bed.
- Inventory taking of the greenery removed (trees, bushes, greenery of gardens, and house gardens).
- Balance of earth mass displaced at the building site with a separate record of humus.

##### **II. In the stage of operation**

- The level of noise intensity in the region with residential built-up – single measurements, within the “as is” analysis and cyclic measurements, arising from the implementation of the duties of the road administrator.

Furthermore, it is recommended in the operation period to conduct a multi-year (minimum three years) observation of changes in the fauna of the areas belonging to the Natura 2000 network.

The purpose of this monitoring is to view the scale and intensity of the adverse impact of the new traffic Route on birds and other protected species. The monitoring shall cover:

- Observation of the migration itinerary and birds' response to the presence of the bridge (in the period of spring and autumn migration)
- Evaluation of the efficiency of birds protection methods against collision with the bridge (illumination).
- Definition of the intensity of the possible adverse impact of the new traffic Route on amphibians to minimize currently the losses occurring, in particular, in the period of seasonal migration,
- Assessment of the Route construction impact on habitat conditions for bats in Fort XV.

The results of these observations together with the documentation and conclusions shall be transferred to the proper road management and the Nature Conservation Officer.

During the building works, the Nature Conservation Officer's supervision is necessary, as well as after its implementation, the monitoring of changes both in the refuges and the population of plants and animals.

## **15. Assessment of transborder impact**

The analysis of the anticipated environmental impact of the project entitled "The New course of National Road No 1 with the road bridge over the Wisła in Toruń" does not indicate any possibility for transborder impact occurrence, i.e. any influence which could go beyond the borders of Poland. The Valley of the Lower Wisła is the only environmental element of the importance going beyond the local effects and even national and European range, as it makes up a birds' conservation area of the European importance (E 39).

It is assessed that the impact of the implementation of the Eastern Route on NATURA 2000 areas shall not be important as the project shall not limit the continuity of the ecological corridor of the Lower Wisła in a manner which would make it impossible for the fauna species to migrate. This shall not cause a significant fragmentation of habitats nor irreversible changes in the species composition of flora and fauna. The most valuable fragments of the Valley of the Wisła are crossed by a long bridge, which ensures the safety

for the habitat, reproduction and migration of water and land species. The investment being planned shall not cause any impact of transborder range.

## **16. Assessment of the fulfilment of conditions for the use of the area in the stage of implementation and operation of the project contained in the decision on environmental conditions**

In point 2 of the Decision by the Kuyavian and Pomeranian Governor No 20/2007 of 24<sup>th</sup> August 2007 *on the environmental conditions for the consent to implement the project*, quite a few conditions were defined for the use of the area in the stage of implementation and operation, with a particular attention paid to the necessity to protect valuable natural assets, natural resources and monuments and to limit burdensomeness to the neighbouring terrain. In consequence of the analysis of materials and documentation prepared by the investor, it was found out that:

- a) *The investor drew up project documentation only for the variant of “Eastern Route”*
- b) *In the period of spring 2009, a supplementary flora inventory of Eastern Route was taken (when compared to the earlier research) in the range of its foreseen impact (Rutkowski L.).*
- c) *Of plant species mentioned in the Regulations covered by the conservation in the area of the project being planned (in the designed road belt) there occurs only yellow everlasting - in the region of Rypińska Street (on the left bank side). These plants may be transferred to the botanical gardens of the Nicolaus Copernicus University in Toruń within point 2 b of the decision.*

*Of the animals species mentioned in the Regulations, in the area of the designed Eastern Route impact, the occurrence of 4 species of amphibians was ascertained (European Toad, Lake Frog, Common Frog, Marsh Frog) and 13 species of birds of which 5 hatching birds (Barred Warbler, Blue Tit, Red-Backed Shrike, Magpie, Starling). It results from the report that the above-mentioned species of animals and their habitats shall not be threatened as a result of the project being implemented. However, we must ensure the supervision of a herpetologist over earth works in the old-river beds (protection of amphibians) and an ornithologist while making building works in the hatching period of the above-mentioned bird species.*

- d) *Activities necessary and recommended in the field of bat conservation in Fort XV are defined in an expert opinion by chyropterologist Dr Krzysztof Kasprzyk of the Nicolaus Copernicus University in Toruń. In his opinion, there is a specification of protecting works to be implemented in the area and around Fort XV. The investor asked the Provincial Nature Conservation Officer to reconcile the above-mentioned works.*
- e) *In consequence of the implementation of the Government program of double-environmental fish restitution which covers the drainage basin of the Wisła, the investor had opinions made from the Institute of Fishing, the Plant of River Fishing in Żabieniec and the Plant of Migrating Fish in Gdańsk. Opinions drawn up were transferred to the Provincial Nature Conservation Officer in Bydgoszcz.*
- f) *According to the design documentation, the construction of the Eastern Route shall not cause the liquidation of any old-river beds and only taking up a fragment of the surface of one of the reservoirs on the right bank side and some damage to the escarpment and the dike which separates two other reservoirs on the same bank. On the left bank side, there are no old-river beds in the Project Route. Within the inventory of the nature related to the occurrence of amphibians, a photo documentation of all water reservoirs was taken on the flooded terrace of the Wisła in the region where the Route runs.*
- g) *The inventory of trees foreseen to be felled off was made by the design office within the documentation entitled “ Inventory taking and management of the tree stand” (“Kontrakt” Gdańsk, 2008). The verification of the documentation with a particular NATURA 2000 area taken into account was conducted by Dr Lucjan Rutkowski (May 2009). The works at felling off trees shall be supervised by an expert indicated by the investor. This condition shall be included in the tender specification, so as to bind the contractor of the building works.*
- h) *Pursuant to the content of the environmental decision by the Kuyavian and Pomeranian Governor, the project of greenery provides for the introduction of exclusively leafy trees, mainly of local species (maple tree, alder, birch tree, oak tree, lime tree, poplar). In the project, there are no new areas with bushes, and only small surfaces, existing now shall be left. The project of greenery does not provide for the application of peat as substrate for new planting.*
- i) *To limit the impact of the project on birds, the following was included in the project:*

- *the construction of an arched double-spanned bridge, 540 m long and 40 m high (instead of an earlier variant of single-spanned bridge 80 m high),*
  - *making a special lighting for the bridge construction with lamp holders directed from the bottom upwards. The lighting holders shall be additionally equipped with screens and tubes to limit the glare. Such additional equipment shall reduce the possible blinding of birds during their flight. Furthermore, the pylone and its ropes shall be delicately illuminated with the help of flood-light.*
- j) *To minimise the interference into the river bed, the project foresees settling in the river stream only one support (the central one); the extreme supports shall be settled in a distance which shall not cause any damage to the bank strengthening. The recommendation to minimise dredging works shall refer to those while piling and settling the steel walls under the central support. In accordance with the project documentation and the water permit granted, during the bridge construction, no temporary supports are foreseen nor hydrotechnical or regulation works in the river bed. The only regulation works defined in the water permit relate to the repair of two groins on the left bank (3/732 and 5/732), between which the bridge crossing shall be located.*
- k) *Before commencing the project implementation, its investor, i.e. the Municipal Road Board in Toruń was granted: all the above-mentioned decisions on environmental conditions for the permit, reconciliations and opinions, water permit for a particular use of waters included (construction of a fixed bridge crossing over the Wisła).*

## **17. Assessment of the environmental protection requirements from the decision on environmental conditions being fulfilled in the building project**

In point 3 of the decision on the environmental conditions for the permit to implement the project, the environmental protection conditions to be included in the building project were set forth. In consequence of an analysis of the project documentation it was found out that:

- a) *In the bridge project no special shelves for birds were provided for, however, the rib construction of arches and the box construction of the platform shall favour making of birds' nests.*

- b) *In the building project related to the water and storm water drainage it was anticipated (pursuant to the conditions of the decision) to apply treatment facilities in form of a centrifugal settler with a lamel insert. In the designed facilities, it is foreseen to obtain a reduction in the concentration of sediments within 76 % and of hydrocarbons of about 60 % which shall allow maintaining the required provisions on admissible standards. For the remaining partial drainage areas, no treatment is foreseen because of low concentration of pollution.*
- c) *The protection of amphibians migration itineraries recommended in the Report of 2007 does not require the construction of special passages for this group of animals as the inventory taken (19) indicated that:*
- *the main migration itineraries of the amphibians relate to the flooded part of the Wisła Valley, which the Route crosses by a long bridge, and therefore it does not make up an obstacle,*
  - *in the region of Łódzka/Lipnowska Streets, where in the neighbourhood, there are clay excavations left, no amphibians' migrations have been found out (during field research),*
  - *in the project for the remodelling of A ditch (Rudacka Street), in the form of a covered channel  $\varnothing$  1.0 m with a length of 167 m, no shelves for amphibians and other tiny animals have been foreseen and it was only reconciled that in the stage of implementation, the channel bed shall be filled with fine stone crushed material.*
- d) *The investor was granted a water permit to carry out steel bridge crossing over the Wisła in km 731 + 340 and:*
- *to carry out in the Wisła Valley a "W" channel with its exit to the River Wisła in km 731 + 318 of the left bank, with the end reaching the regulation line marked out by groins No 3/732 and 5/732 of the upper exit ordinate 34.54 m n. K., which corresponds to SNW; the exit diameter  $D=0.8$  m*
  - *remodelling of the drainage ditch "A" from km 1 + 956 to km 1 + 805 of a section length of 167.0 m, into a covered channel  $D=1.0$  m*
- e) *In the greenery design, making of greenery belts was foreseen, whereby in the areas of residential built-up on the right bank side (Wschodnia Street), because of the insignificance of the area, only acoustic screens were foreseen*

*with fragments of the existing greenery left. On the left bank side, the residential built-up has not been developed yet, and therefore, a basic minimising measure shall be the proper management of areas and the exclusion of any new built-up in the belt up to 150 m - this suggestion was handed over to the authorities responsible for spatial planning (The Municipal Urban Planning Department). At the section of the long bridge running through gardens in the Rudak Housing Estate, a compact belt of leafy trees was designed to separate the Route from the recreation areas.*

- f) In the design documentation, the construction of acoustic screens was designed on sections indicated in the report. The acoustic analysis was made in accordance with the requirements of the Regulations by the Minister of Environment of 14<sup>th</sup> June 2007 on Admitted Levels of Noise in the Environment.*
- g) The obligation to make an “as - is” analysis shall be imposed on the future road administrator, i.e. the MRB in Toruń.*
- h) The condition to use the materials which fulfil the standards and attestations while building shall be included into the tender specification, so as to oblige the contractor of building works.*

## **18. Final conclusions**

The analysis of the environmental impact of the project entitled: “Building of road bridge in Toruń together with access roads” presented at the background of the environmental conditions and the design solutions allows forming the following conclusions and recommendations which should be taken into account at the stage of implementation:

- 1) The project, being endorsed, is of enormous importance to improve the traffic between the northern and southern parts of the City of Toruń and for the transit traffic on National Road No 1 within the City.
- 2) The ecological impact of the Eastern Route construction means the reduction of noise and the improvement of air-sanitary conditions, as well as, the safety of traffic in the centre of the City by relieving the only bridge crossing.
- 3) The investment, being planned, shall cause locally adverse changes in the natural environment and worsen the living conditions of the inhabitants on areas adjoining the “Eastern Route” and the new course of National Road No 1.

- 4) The most important areas of potential nature conflicts are:
  - the Route passing through the Valley of the River Wisła and near Fort XV, which is subject to conservation within the NATURA 2000 network,
  - the damage to the high northern escarpment (the right one) of the bank of the Wisła Valley,
  - the interference into the river bed (the support of the double-spanned bridge),
  - felling off trees on the project Route, in particular, at the section between Rudacka - Rypińska Streets and railway rails;
  - the interference with gardens in Rudacka and Rypińska Streets (loss of greenery and permanent reduction in the recreation values).
- 5) To limit the negative changes in the indicated sensitive and conflict areas, corresponding solutions were applied in the project to prevent or minimise the impact.
- 6) For the whole Route, the following general recommendations shall be adopted:
  - the drainage of the Route belt shall be carried out in accordance with the project and the water permit granted, in a manner to ensure the drainage and treatment of storm water running off the roadway and hardened roadsides, in accordance with the requirements of detailed provisions (list of legal provisions),
  - the scope of felling off trees shall be limited to necessary minimum (pursuant to separate inventory documentation),
  - the earth works shall be carried out, so as to ensure a limitation of the working belt,
  - the layer of humus shall be deposited and used for land reclamation,
  - waste after tearing off works shall be immediately taken out from the project site,
  - the back up site of the Route shall be organised out of the range of the NATURA 2000 area,
  - the construction timetable shall be drawn up in such a way as to ensure the main earth works between the vegetation and birds hatching period.
- 7) The natural conditions occurring in the separated Route sections taken into account, it is deemed advisable to recommend the following detailed guidelines:

- in the zone of the Wisła Valley escarpment on the right bank side (km 0+650 - 0+850) - designed retain walls shall be made, the observation of the escarpment after the completion of building works is recommended;
- on the section of the flooded terrace of the right bank (km 0+850 - 1+200) it is recommended:
  - while building the supports for the long bridges, the protection of the reservoirs of old riverbeds against the excessive drainage shall be ensured (protection of the reproduction sites of amphibians),
  - making a strengthening for the dyke and banks of the water reservoirs on the eastern bank side in the region where supports No 7 and No 8 are settled,
- on the bridge section over the River Wisła (km 1+200 - 1+700)
  - building works shall be carried out in the period of mean and low level of water; during building works, the water flow shall be limited to the least possible degree,
  - a strengthening of the right bank escarpment shall be made (retain walls according to the design);
- at the section of the flooded terrace on the left bank side (km 1+700 - 2+500)
  - limit to a minimum the interference of building works belt with the adjoining gardens,
  - while remodelling A ditch at the section colliding with the designed Route (closed channel) ensure the possibility for amphibians and other small animals to migrate (for instance a shelf or the bottom covered by crushed stones).
- at the section from Rudacka Street to Rypińska Street (km 2+550 - 3+200)
  - recommendations as for the whole Route, furthermore, it is necessary to make acoustic screens provided for in the design
- at the section from Rypińska to Łódzka Streets (km 3+200 - 4+120)
  - recommendations as for the whole Route, and furthermore, it is necessary to apply acoustic protection provided for in the design
  - to weaken the adverse impact of the project on the bat refuge (Fort XV), it is recommended to limit the speed of vehicles down to 50km/h at the section from Rudacka Street to the railway viaduct.
  - attention shall be paid to the location of the back-up facilities and access roads at a minimum distance of 150 m from the borders of the refuge.

- 8) The construction of the bridge crossing shall be equipped with the designed lighting, making possible the adjustment of flight to the birds migrating in the Wisła Valley,
- 9) In the places where water is drained both from the road and the stormwater network to the surface water, a treatment plant, being designed, shall be made in accordance with the conditions for the water permit,
- 10) To minimise the effects of the impact of noise emission, the designed acoustic screens shall be made in specified sections during building works, the need to adjust them to the appearance of the surrounding nature and landscape shall be taken into account (screen elements with the participation of greenery are preferred);
- 11) having transferred the road into use, within the “as is” analysis, the measurements of noise intensity shall be made to apply appropriate solutions of acoustic protection,
- 12) to limit the road impact related to the emission of pollution to the air, it is recommended to take into account in the Spatial Layout Plans, in the areas where residential buildings occur, the belts of insulation greenery and appropriate management of the areas adjoining the road belt (among others the introduction of built-up which does not require protection - of commercial and service type, the exclusion of new residential built-up in the belt up to 150 m from the road axis).
- 13) With reference to the concepts of variant solutions of the eastern Route analysed at this stage, we claim that the recommendations contained in the 2007 report were taken into account in the building design. They relate to:
  - the Route crossing with Szosa Lubicka and Żółkiewskiego Streets in form of a non-collision free interchange, with transit roadways in the tunnel,
  - the construction of a double-spanned bridge as less interfering with the environment of NATURA 2000 area and also better incorporated into the surrounding landscape.
- 14) The unit which has drawn up the report claims that the road project being planned, may be the object of further implementation works.

Chartered expert from the list of the Minister  
of Environmental Protection, Natural  
Resources and Forestry  
Licence No 1410  
Wiesław Tomaszewski M.A.  
*/-/ signature illegible*

*Translator's notes:*

1. POLiŚ - Operating Programme, Infrastructure and Environment

## 19. List of material and sources

The basis of the report were the designed documentation and studies mentioned below together with the literature on the subject matter:

- 1) The architectural and building design - („Mosty i obiekty inżynierskie” Bridges and engineering facilities) drawn up by: PONT-PROJEKT Sp. z o.o. Gdańsk, 10.2008,
- 2) The Spatial Layout Plan drawn up by: KONTRAKT Gdańsk, 12.2008,
- 3) The design for the demolition of large volume facilities drawn up by: KONTRAKT Gdańsk, 10.2008,
- 4) The design of greenery drawn up by: KONTRAKT Gdańsk, 12.2008,
- 5) The navigation analysis drawn up by: KONTRAKT Gdańsk, 11.2008,
- 6) The water legal survey for the construction of road bridge over the Wisła in km 731,430 drawn up by: KONTRAKT Gdańsk, 1.2008,
- 7) The water legal survey for drainage of storm water and remodelling of ditch “A” drawn up by: KONTRAKT Gdańsk, 12.2008,
- 8) The functional assessment of selected variants for the course of the new Route over the Wisła in Toruń, Fundacja “Rozwój UTP” Bydgoszcz, 07.2008.

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13. Rutkowski L., Szata roślinna otoczenia Trasy Wschodniej w Toruniu, 2009.
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15. Raport o stanie środowiska województwa kujawsko-pomorskiego w 2007, Bydgoszcz 2008,
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## **20. Attachments**

- 1) Designed Eastern Route - illustrative map
- 2) Location variants for the bridge crossing in Toruń
- 3) Location plan of the Eastern Route with elements of acoustic assessment
- 4) Important areas of flora and fauna species in the region of the designed Route





**CONSIDERED BRIDGE CROSSINGS IN  
THE CITY OF TORUŃ**

**WESTERN ROUTE**

**EXISTING BRIDGE  
NAMED AFTER  
PILSUDSKI**

**NEW BRIDGE  
ROUTE**

**EASTERN  
ROUTE**





**Name of the project:** “The new course of National Road No 1 with the road bridge over the Wisła in Toruń - stage 1 - building the road bridge together with access roads, joining National Road No 1 with National Roads No 15 and No 80” entered into the basic list of individual projects under No POIiŚ 6.1-33 entitled “Building the Road Bridge in Toruń with access roads”.

**Title of the map:** Results of nature in inventory

**Scale:** 1:10000

**Legend:**

- borders of NATURA 2000 -PLB040003 area - The lower Wisła valley

- hatching birds areas:

A - Corncrake (*Crex crex*)

B - Barred Warbler (*Sylvia nisoria*)

C - Red-backed Shrike (*Lanius colluria*)

Amphibians living places - old river beds

Plants protected:

1. European Columbine (*Saquilegia vulgaris*)
2. Small-flowered winter cress (*Barbarea stricta*)
3. Goosefoot (*Chenopodium acerifolium*)
4. Lily of the Valley (*Convallaria rhipidophylla*)
5. Hawthorn (*Crataegus rhipidophylla*)
6. Yellow Everlasting (*Helichrysum arenarium*)
7. Beard of Jove (*Jovibarba (Sempervivum)*)
8. Burr Clover (*Medicago minima*)
9. Yellow Water Lily (*Nuphar luteum*)
10. Black Poplar (*Populus nigra*)
11. Bot Bu (*Salvinia natans*)
12. Guelder Rose (*Viburnum opulus*)

Nature habitats:

Water reservoirs in the old river beds

Flooded slimy river banks

Riverside and ecotone herbs

Willow and poplar riverside carr and willow bushes

Fort XV - bat refuge

**Drawn up by:**

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*On each page of the document there is an illegible signature and seal which reads:  
In compliance with the original, date 24<sup>th</sup> June 2009.*