

NON-TECHNICAL SUMMARY

I. PURPOSE OF THE PROJECT

Nowadays, the transportation by car in Bratislava – Dunajská Lužná section on the existing road I/63, which technical parameters do not accommodate the existing traffic load. At the same time, the road passes through the built-up part of municipal part Bratislava – Podunajské Biskupice and villages of Rovinka and Dunajská Lužná, where it degrades environment by noise and exhalates and threatens the safety of inhabitants.

The purpose of the prepared construction is the building of capacity, directionally divided four-lane expressway with the optimum route from the point of view of its location outside the built-up area, connection to both the existing and planned communication network of the capital city of the Slovak Republic, Bratislava (D4, R7 BA Prístavný most – BA Ketelec), as well as from the point of view of fluency and safety of transport, while respecting the environment protection and nature conservation.

After the construction of the expressway R7, the negative impacts of traffic on environment shall be reduced, the fluency and safety of transport shall be improved and the accident rate shall be diminished. A favourable impact is expected also from the point of view of the protection of inhabitants against noise. From the economic point of view it is possible to expect favourable impacts in the form of the reduction of motor vehicle fuels.

II. BRIEF DESCRIPTION OF THE TECHNICAL SOLUTION

Then beginning of expressway R7 is in the planned grade separated intersection (GSI) "Ketelec" (R7 with highway D4), in the proximity of gravel mining territory of Podunajské Biskupice, ca 1.8 km to the south of Slovnaft, a.s., in the municipal part Bratislava – Podunajské Biskupice, where it follows the prepared section of the construction of the "Expressway R7 BA Priesaku – BA Ketelec". Further, the route of the expressway R7 passes by the protected territory of the European importance NATURA 2000, Ramsar location of Dunajské Luhy and the CHKO Dunajské Luhy at the distance of ca 159 m to 200 m, continues in the south-east direction to the south-west of villages of Rovinka and Dunajská Lužná, while it goes by the bio-centre of a local importance mBC3 Lučina and a small lake in mBC1 Kamenný pasienok. It crosses the remnants of the Former Danube river branch between Dunajská Lužná and a village of Kalinkovo, the old Danube dam and the existing road III/0635 with an overpass bridge. The given section of the expressway R7 ends on the GSI "Dunajská Lužná" (R7 with road I/63) between Dunajská Lužná and Šamorín, where it shall connect to the prepared section of the "Expressway R7 Dunajská Lužná – Holice."

The expressway R7 is designed in **category R 31,5/120**, with four-lane width arrangement, i.e. with wider central separating zone so that it would be prospectively possible to broaden it to 6-lane one towards to axis of the expressway. The overall length of the designed section of R7 is **0.200 km + 8.225 km**.

There are projected the following grade separated intersections on the expressway R7:

GSI "Ketelec"

GSI "Dunajská Lužná"

The expressway R7 was defined by the resolution of the government of the Slovak Republic No. 523 of June 2003 and it is the part of the elementary network of highways in the corridor of Bratislava – Dunajská Streda – Nové Zámky – Veľký Krtíš – Lučenec. At the same time, it is the part of the international European route E 575 in the direction of Bratislava – Dunajská Streda – Medveďov – Vámoszabadi – Győr and a main interconnection between the capital city of the Slovak Republic, Bratislava and the south centres of Trnava and Nitra regions.

The given construction of the expressway R7 is in accordance with the strategy of the development of Slovakia. The accord with international contracts and other documents the

Slovak Republic is bound with is being assured by the Ministry of Transport, Construction and Regional Development of the Slovak Republic (hereinafter referred to as the MDVRR SR).

The given construction of the expressway R7 is in accord with the concept of the territorial development of Slovakia (KURS) and with the concept of the development of road and highway network of the Slovak Republic.

III. THE CHARACTERISTICS OF THE AFFECTED AREA

The route of expressway R7 in Bratislava - Dunajská Lužná section is located in Bratislava region, in districts of Bratislava II and Senec. The construction is located in the area of Podunajská nížina Lowland, the Podunajská rovina Plain unit. The beginning of the proposed route starts in the intersection "Ketelec", it further continues in an agricultural countryside outside the village residential areas and it is terminated in the intersection "Dunajská Lužná". The territory is formed predominantly by agricultural countryside, furthermore, there are inundated forests alongside the Danube River, game refuges and the accompanying greenery of country roads. The territory was significantly changed due to the influence of the settlement and agricultural large-scale production. Agriculture prevails in the surroundings of the route and the picture of intensively cultivated soil dominates. The locations with higher biological diversity are the biotopes of water courses and the stands alongside the water courses.

IV. THE PRINCIPAL CHARACTERISTICS OF ENVIRONMENT

Geomorphological Characteristics

The territory of interest takes the easternmost part of Bratislava - the municipal part of Podunajské Biskupice and continues to the east in the territory of the villages of Rovinka and Dunajská Lužná. According to geomorphological classification (Mazúr, Lukniš 1984), the given territory belongs to the sub-province of Malá Dunajská kotlina Basin, the western margin of the Podunajská nížina Lowland, the Podunajská rovina Plain unit. The terrain is plain, with a moderate down-slope towards the south-east. From geomorphological point of view it is young structural lowland being shaped even nowadays. The persisting reduction of and accumulation activity of the Danube River acted in its shaping as the main geomorphological factors.

The relief is flat here with an inconsiderable segmentation. This monotonous flatland is sectioned only with oxbows and live river branches or hydrotechnological constructions erected in recent period within the waterworks Gabčíkovo. From the point of view of the typological relief classification, the prevailing portion of the territory is characterised with fluvial relief.

Geological Situation

As for the regional geological classification of the West Carpathians, the territory of interest belongs to a single geotectonic structural unit – the Podunajská nížina Lowland. The Podunajská nížina Lowlands forms a basin filled with Neogene sediments. The subsoil of Neogene forms the crystalline period of the Lesser Carpathians that was subjected to a heavy denudation during Mesozoic and at the beginning of Tertiary and its surface was rather flattened. However, the Neogene period is a significant change in the geological development of the Podunajská nížina Lowland. The contemporary relief of the lowland part of the territory (the Podunajská rovina Flatland) is the result of the Quaternary erosion and accumulation activity of the Danube River. The predominant part of the lowland territory is covered by the accumulation of fluvial sediments apparently of the Danube origin, which is proven by the Alpine origin of gravels.

Greater part of the lowland area of the territory was an inundation territory of the Danube River in history, the consequence of which the youngest gravel accumulation is covered with floodplain sand-soil sediments. The geological structure of wider area belonging

to the SW part of the Podunajská nížina Lowland is characteristic for entire areas, by the representation of the sediments of Neogene and Quaternary.

The Neogene sediments are represented mainly by sandy calcareous clays and silts, clayey and silty fine-grain mica sands. The Quaternary sediments are represented in the area of interest:

- By the complex of fluvial sediments,
- By the complex of anthropogenic sediments,

Engineering and Geological Situation

According to the engineering and geological zoning, the territory belongs to the region of Neogene tectonic grooves, the areas of intra-Carpathians lowlands – the Podunajská nížina Lowland. There are engineering geological regions of valley river warps and Neogene fine-grain sediments in the given territory. The region of valley river warps corresponds to the territory built by the complex of fluvial sediments with the highest representation. It is made of the facies of sediments of river bottom, the adjacent sandbanks, aggradational dams, alluvial sediments and oxbows. The region of Neogene fine-grain sediments is prevalingly made of fine-grain sediments with the positions of loamy sands and sandy loams.

Hydrogeological Situation

From the point of view of hydrogeological zoning of Slovakia, the given area belongs to the Q 052 – Quaternary of SW part of the Podunajská rovina Flatland region Hydrogeological region Q 052 – Quaternary of SW part of the Podunajská rovina Flatland is the most significant in the entire Slovak Republic from water management point of view. This is a tectonic depression filled mainly by the Danube gravels. Ground water in the area of interest is bound to two different geological and structural units with different hydrodynamic conditions of the water-bearing horizons. Neogene sediments of the Podunajská nížina Lowland as a unit make the impermeable subsoil for gravel fluvial sediments creating the most suitable environment for the accumulation of ground water. Ground water in the Neogene sediments is bound to sandy locations and in the marginal part of the Podunajská nížina Lowland also to permeable sandy and clastic rocks on the basis of Neogene in the form of artesian horizons.

Climatic Situation

Temperatures

From climatic point of view, the monitored territory may be classified in warm climatic area with the number of summer days with maximum air temperature of 25°C and higher in a year exceeding 50, with moderately wet sub-region, warm, moderately wet district, with moderate winter, with temperature in January above –3 °C, in southern and south-eastern parts of the territory even moderately dry sub-region, warm, moderately dry district, with moderate winter and temperature in January above –3 °C.

From climatic and geographic point of view, the concerned territory is characterised with warm lowland climate with moderate inversion of temperatures, dry to moderate dry. The sum of temperatures of 10°C and more reach the values between 3,000 and 3,200, average temperature in January reaches –1 to –4 °C, average temperature in July reaches 20.5 to 19.5 °C, annual amplitude of average monthly air temperature is 22-24 °C.

Precipitation

Annual total precipitation is 530 to 650 mm. The precipitation situation is determined by the prevailing atmospheric processes and local orographic conditions. Bratislava is located at the north margin of the Podunajská nížina Lowland at the altitude of around 135 m above sea level. On the NW side, the village residential area interferes with the southern part of the Lesser Carpathian mountain range with altitudes up to 500 m and continues in the Záhorská nížina Lowland on the NW foothills. The Danube, flowing through the southern part of the city, created the depression in the Lesser Carpathians mountain range on the south-western part of the city, so called Devín brána gate.

Average monthly precipitation per year is 579 mm. Annual total precipitation is 530 to 650 mm.

Windiness

One of the most important orographic factors for the climate of Bratislava is Devínska brána gate, formed by the recession of the Danube River to the south edge of Lesser Carpathians. This is the place, through which air masses input the Podunajská nížina Lowland from NW and N through the city, often accompanies with stormy wind and fast weather changes. Maximum of strong winds during a year falls on February to March period or April. Minimum of strong winds falls on the end of summer and beginning of autumn. Strong winds have north-west, north and south-east direction. The territory of Bratislava with adjacent part of the Podunajská nížina Lowland belongs to the windiest territories of the Slovak Republic.

Air

The south-east part of Bratislava is the territory with the greatest portion of industry in urban agglomeration, which is demonstrated also on the overall environmental load. The greatest portion on the deterioration of the quality of environment belongs to refinery, power energy, chemical industry and transport. From the point of view of the production of emissions of the basic pollutants, this part of Bratislava belongs to the greatest producers within the entire Slovak Republic. There are 31 large sources of air pollutions and ca 220 medium-sized sources of air pollution. The quantity of emitted basic pollutants (BP) in the agglomeration of Bratislava for 2005 and the share of five biggest (selected) operators of the sources - Slovnaft a.s. Bratislava, Paroplynový cyklus a.s., Volkswagen Slovakia a.s. and Odvoz a likvidácia odpadu a.s., Bratislavská teplárenská a.s.

Surface Water

From hydrogeographic point of view, the territory belongs to the main basin of the Danube river. The Slovak section of the Danube river belongs to the upper part of middle course, yet it still has the features of alpine character originated in all right-side tributaries springing in the Alps. On the basis of the data, the Danube river is the alpine type of a river. The minimum levels of the river occur in autumn and winter in the following months: October, November, December, January. Maximum levels are in the months: March, April, May, June and July, August. From the overall length of the Danube river of 2,800 km, the section of rkm 1,708.2 – 1,888.2 (the length of the river in the Slovak Republic is 172 km) touches the territory of the Slovak Republic. The catchment area above Bratislava is 131,388.2 km², long-term average rate of flow is 1,992 m³.s⁻¹. In addition to the main course, however, also its tributary, the Little Danube, is important from hydrological point of view.

In the recent period, the hydrological regime under Bratislava was significantly affected by the construction of waterworks of SVD Gabčíkovo. The dominant portion in water pollution in the territory of interest belongs to the pollution coming from point sources. This is the release of waste water from industrial facilities, in particular of chemical industry. Another potential source of surface water pollution is waste water produced by domestic waste water and storm sewer. After the treatment in waste water treatment plant, the prevailing part of waste water is released to the Danube and the Little Danube rivers. As for the quality of surface water in the Danube above Bratislava, the influence of tributary of the Danube .-. the Morava river (certainty class III and IV) can be seen-

Groundwater

The given territory is earmarked by the hydrogeological region Q 051 "Quaternary of the W margin of the Podunajská nížina Lowland". From local hydrogeological point of view, we may systematically characterise the environment as follows:

Hydrogeological isolator – is represented by the rocks of Neogene series of rocks represented by sandy clays with minimum circulation and accumulation of ground water.

They are represented with highly and moderately plastic types of soils. Their compactness is partially infringed by closed sandy lenses.

Hydrogeological collector – it is composed of the rocks of fluvial sediment load of the surface watercourse of the Danube river.

The collector is represented by gravels, sandy gravels and sands, it is a permanent aquifer with a free level of ground water, with very high transmission rate. Ground water is in a hydraulic connection with the Danube and its level depends upon the flow rate in the surface watercourse. The chemical composition of water under the naturally unimpaired conditions is formed by the mineralisation processes in the rock environment to very limited extent and it bears its basic characteristics with the infiltrating ground water. After the infiltration of the Danube water to gravel and sandy sediments, mineralisation processes (in particular hydrolytic decomposition of silicates and carbonate dissolution) start on one side and demineralisation processes (sorption, degradation of organic substances, denitrification of nitrates, etc.) on the other side.

Water areas

There are several water areas in the monitored territory, they are represented by naturally dead oxbow lakes of the Danube river and artificial gravel pits. Dead oxbow lakes are nowadays mostly separated from the main stream, while their water regime is heavily affected by the construction and operation of the water diversion system Gabčíkovo. There is Biskupické rameno branch in wider territory, it is the part of the CHKO Dunajské Luh and artificial water areas that are the remnants after gravel mining.

Springs and Headwaters

There are no natural springs and headwaters in the territory of interest.

Thermal and Mineral Water

Mineral and thermal water in the area of the Danube basin are bound to subsoil Neogene layers in the depths of ca 800 to 1,300 m, while the natural outflows of thermal and mineral water are not present in the territory of interest due to their occurrence in considerable depths. There is the protective zone of level II and natural healing sources in Čilistovo in the considered territory. The structure of the source can be classified amongst semi-open structures with natural infiltration and accumulation area and artificial outflow area.

Water Conservation Areas

According to Annex 1 to the Regulation of the Ministry of Agriculture of the Slovak Republic No. 525/2002 Coll. setting the list of significant water supply streams, the Danube river and the Little Danube river are included in the list of significant water supply streams. The Danube gravel alluvia are a significant reservoir of ground water and they represent the biggest accumulation of ground water in Central Europe. The main source of ground water is the infiltrated water of the Danube, while the greatest sources of drinking water are located in the alluvial zone of the river. For the above reason, this territory is protected by law and its entire belongs to the significant water supply area of CHVO Žitný ostrov.

Soils

The soil cover in the monitored territory is under the influence of long-term anthropogenic activities in variegated erosion-accumulation countryside very heterogeneous. From amongst soil types, the soils represented here are prevalently of hydromorphic character, there are partially semiterrestrial soils and the soils of terrestrial characters have been developed on old aggradational embankments, where the impact of ground water on soil-forming processes had ceased. Overall, typical fluvisols dominated, lighter ones on fluvial sediments that are used in the section between Podunajské Biskupice, Rovinka and Dunajská Lužná as fertile agricultural soils. Rather significant portion of fluvisols is located alongside the Danube river under the remnants of inundated forests. Smaller enclaves of

black typical carbonate soils, including their glei forms, are located in the local units alongside the Danube river and the Little Danube river. There are glei subtypes of the above mentioned soil types and typical gleis in the depression locations of the Danube river meadows and under the inundated forest stands. Chernozems are developed on older aggradational embankments, without the impact of ground water level. They are located in the area to the south of Rovinka and Dunajská Lužná that is agriculturally used in an intense way.

The following soil types are represented in the given territory:

- Carbonate chernozems,
- Carbonate fluvisols,
- Carbonate "chernozem" fluvisols.

In addition to these naturally occurring soils, there are also the types conditioned or created by a man in the monitored territory.

- Anthrosoil– anthropogenic soils in the proximity of gravel pits, construction sites, in the plant areas, etc., and
- Cultivated soils – they represent a special soil group (originally chernozem group) under orchards, modified by the human activity in upper horizons.

Flora and Fauna - Qualitative and Quantitative Characteristics, Biotope Characteristics

Flora

From the phytogeographic point of view, the vegetation of the territory of interest belongs to the area of Pannonian flora, the sub-district of Eupannonian xerothermic flora, the territorial unit of the Podunajská nížina Lowland, while there are the following units of potentially natural vegetation on the assessed territory:

Willow and poplar inundated forests – occur on the lowest locations with high level of ground water. Surface floods periodically occur in spring months. Ground water level is high even after the decrease of inundation water. From the original communities, White Willow, Crank Willow prevail. White Poplar, Black Poplar and Grey Poplar joined them on relatively drier places. From amongst bushes, Blood-twigg Dogwood, Black Alder, etc. are rather abundant there. Herbaceous understorey is poor in species number. One species, e.g. Common Nettle, European Dewberry, Reed Canary Grass, etc. usually dominate.

Oak inundated ash stands (transition inundated forests) – it is the ecosystem characteristic with abundance of soil moisture. The dominant position in the original stands belongs to Pedunculate Oak with the admixture of Ash or Field Elm with Ash and Oak, White Poplars were blended in. Shrub storey is composed mainly of Black Alder, Blood-twigg Dogwood, etc. Nowadays, White Poplar stands prevail on many locations. Ash-elm-oak forests – the forest ecosystems bound to drier locations of the Danube basin, to younger and older aggradation embankments and terraces. They are typical hardwood inundated forest. The basic plant community is elm oak stand, not bound to ground water. In the tree storey, Desert Ash, Pannonian Mountain Ash, European Ash, Lock Elm, European White Elm and Pedunculate Oak prevail. In the herbaceous storey, Ground Elder, Blackberry, Common Nettle prevail. Forest stands have the character of monocultures of various species in a substantial part. The following species are represented in particular there: White Ash, seldom also European Ash, bred Poplar, Black Locust, Silver Birch and Tree of Heaven. The landscape vegetation has the character of scattered vegetation within the agricultural countryside – game refuges, groves, shelter belts, accompanying vegetation alongside communications, etc. The permanent grass stands are represented by hayfields and pastures, located at the outskirts of branches and in terrain depressions.

Fauna

Variegated natural conditions in the route of the expressway (inundated forests, water areas agrocoenoses) with sufficient fodder represent suitable conditions for many species of

the Central European broadleaved forests, aqueous, swamp and field species, as well as the species occurring mainly on agriculturally utilised country.

From the point of view of hunting utilisation, the expressway comes through the hunting districts of several hunting associations – PZ Dunaj, PZ Podunajské Biskupice and PZ Dunajská Lužná and Kalinkovo. Hunting district of PZ Dunaj taking over prevaillingly the entire continual forest complex of Biskupické luhy is the hunting district in the "Roe region with quality classified Deer game, Roe Deer and Wild Boar game and small game (Pheasant, Rabbit, Wild Duck, Wild Goose)." The adjacent hunting regions on agricultural lands are hunting districts with Roe Deer and small game.

Birds

The occurrence and nesting of birds was determined in these belts (monitored areas), while both existing and partially published data were included. Subsequently, the species nesting and non-nesting in the considered territory were differentiated and in addition also the species not nesting directly in the considered territory, but in its close proximity with food territories reaching also the considered territory. This category was considered inter alia for the reason the possible interference with their territories would directly affect also the nesting pairs outside the territory.

The occurrence of 112 bird species was determined on the territory of interest. Out of this, 72 bird species nests i the territory of interest, another 8 species nests in the proximity (in majority of cases forest complex in the surrounding area) and the territory of interest is the part of their food territories (e.g. Northern Goshawk).

The assessment of the importance of avifauna

From amongst the found species, 17 are classified as so called species of the European importance and 94 are the species of national importance (the Regulation of the Ministry of Environment No. 24/2003 Coll.), 1 species is entered into the red list in the CR category (critically endangered), 5 species in the EN category (endangered), 1 species in the VU category (vulnerable, 4 species in the NE category (not assessed) and 18 in the LR category (less endangered) in any of three categories (Krištín et al.2001). From the point of view of species composition of the nesting species, we may consider the location to be importance under the conditions in Slovakia. The species nesting (or probably nesting) in the proximity that seldom fly also to the monitored territory (Black Kite) increase the importance of the location to even greater extent- Furthermore, we must suppose there are also irregular nesting birds, several-ear intense monitoring would be necessary for their entrapping, it has not been carried out on the entire monitored area yet. Within the spatial distribution of nesting birds in the monitored territory, their highest number was determined in the proximity of forest fragments and the remnants of oxbow lakes.

Biotope Characteristics

The biotopes from three formation groups occur in the route of the expressway. Biotope Ls1.2 Oak-elm-ash lowland inundated forests from formation group of Forests – Ls, biotope Vo2 Natural eutrophic and mesotrophic still waters with vegetation of floating and/or immersed vascular plants of *Magnopotamion* or *Hydrocharition* type from the formation group of Water biotopes – Vo and biotope X7 Intensively cultivated fields from formation group of Ruderal biotopes – X.

From the point of view of nature protection, biotopes Ls1.2 Oak-elm-ash lowland inundated forests and Vo2 Natural eutrophic and mesotrophic still waters with vegetation of floating and/immersed vascular plants of *Magnopotamion* or *Hydrocharition* type are important. They are the biotopes of the European importance pursuant to the Act of the National Council of the Slovak Republic No. 543/2002 Coll. on nature and landscape protection as amended and the Regulation of the Ministry of Environment of the Slovak Republic No.24/2003 Coll. implementing the Act No. 543/2002 Coll. on nature and landscape protection as amended.

The biotopes in the route of the expressway:

Ls1.2 Oak-elm-ash lowland inundated forests (the biotope of the European importance 91 F0)

This type of biotope occurs in the route of variant 1 on three locations. The first one is the part of greater complex of Biskupice inundated forests and it approaches the expressway from south to the distance of ca 100 m approximately at km 0.0 to 0.6. This biotope and related species – Great Capricorn Beetle (*Cerambyx cerdo*), Stag Beetle (*Lucanus cervus*), are the subject of protection of SKUEV0295 Biskupické luhy. The Slovak Republic is obliged to preserve the favourable condition of these biotopes and species. The condition of the biotope is partially affected by forest management. Since this location is the part of SKUEV0295 Biskupické luhy, we can suppose the favourable condition of the given biotope shall be gradually achieved in future. Second location is at the distance of ca 100 m too to the north of the proposed road, approximately at km 1.6 to 2.2. The biotope is bound to the remnants of the route of the former Danube river branch. Notable is also the mass occurrence of a rare wood species in the undergrowth of inundated forest – European Bladdernut (*Staphylea pinnata*). The wood species structure is influenced by forest management in past, which fast demonstrated by the reduction of the representation of Pedunculate Oak in favour of Field Maple. The invasive wood species - Tree of Heaven (*Ailanthus altissima*) and Black Locust (*Robinia pseudoaccacia*) on the periphery and on narrowed, better lit parts - occur here only minimally. Overall, however, the biotope in this location is in a favourable condition. The designed expressway crosses third location directly at km 4.0. The part of forest stand represents the biotope of the European importance. The biotope is of a similar character as on second location, significantly higher representation belongs to White Poplar and Grey Poplar. Also several-hundreds-year old Pedunculate Oak at the edging of a field dominates the biotope fragment. The biotope is in a favourable condition.

Vo2 Natural eutrophic and mesotrophic dead waters with the vegetation of floating and/or immersed vascular plants of Magnopotamion or Hydrocharition type (the Biotope of the European importance 3150)

This biotope is located in the gravel pit in the centre of agrocoenoses roughly between the Natural Reserve Topoľové hony and the village of Dunajská Lužná (Suchá jama fishing district) This biotope is not directly in the corridor of R7, however it is in its close proximity. In addition to the protection of the biotope itself, it is significant in this location in particular as watering place for game, the reproduction location of amphibians and the nesting place of birds. For this reason, there are many migration paths of fauna leading to the location and they would be impaired by the expressway R7.

X7 Intensively cultivated fields

The biotope taking the essential area in the route of this variant of expressway. It is formed by fields with grains in particular. In addition to the above forest biotope, it is interrupted only with country roads with the accompanying vegetation. This biotope does not belong to the biotopes of the European and national importance. According to the biotope catalogue, the typical field weeds and all rarer archeophytes are missing in this biotope. Just a small number of the most resistant synantrophic species tolerant to the extreme conditions remain in the plantations. They are usually concentrated on the outskirts of the field plantations, penetrating there from baulks and surrounding plantations.

Protected territories

The substantial portion of the monitored territory is located in the Podunajsko area that is significant from the point of view of forest, gene pool and water resources. There are the remnants of inundated forests there, to which notable gene pool resources of both flora and fauna are bound. The locations of protected territories are bound to inundated forests located in the vicinity of the Danube river. The selected sections of the Danube river with adjacent flood plains have assured protection by the declaration of the territory to be the Protected Landscape Area (CHKO) by the Regulation of the Ministry of Environment of the Slovak Republic No. 81/1998 Z.z. on the Protected Landscape Area Dunajské luhy of 3

March 1998 with the effect as of 1 May 1998. Pursuant to the Act of the National Council of the Slovak Republic No. 543/2002 Coll. on nature and landscape protection, the Protected Landscape Area belongs to large-area protected territories.

The territory of the Protected Landscape Area represents a unique natural environment under the Central-European conditions with its vast system of river branches. From the point of view of nature protection, out of 172 km long Slovak section of the Danube, the most valuable is 80 km long section from Bratislava up to Zlatná na Strove with a developed branch system, extensive complexes of inundated forests and alluvial meadows.

CHKO Dunajské luhy is one of three the most significant territories in Slovakia for nesting of the following species: White-tailed Eagle (*Haliaeetus albicilla*), Little Egret (*Egretta garzetta*), Black Kite (*Milvus migrans*), Little Bittern (*Ixobrychus minutus*), Mediterranean Gull (*Larus melanocephalus*), Common Tern (*Sterna hirundo*), Kingfisher (*Alcedo atthis*) and one of five territories for nesting of the following species: Garganey (*Anas querquedula*), Common Redshank (*Tringa totanus*), Red-crested Pochard (*Netta rufina*) and Gadwall (*Anas strepera*). More than 1% of the European migratory population of the species: Smew (*Mergus albellus*), Tufted Duck (*Aythya fuligula*), Common Pochard (*Aythya ferina*) and Common Goldeneye (*Bucephala clangula*) regularly winters in the territory or migrate. The territory supports during migration more than 20,000 and during wintering more than 70,000 individuals of several water bird species. Furthermore, more than 1% of the national population of the species: Tawny Pipit (*Anthus campestris*), Black Stork (*Ciconia nigra*), Marsh Harriers (*Circus aeruginosus*) and Sand Martin (*Riparia riparia*) regularly nests in the territory.

Second grade of protection pursuant to the Act of the National Council of the Slovak Republic N. 543/2002 Coll. on nature and landscape protection is valid in the CHKO Dunajské luhy. The protected landscape area is composed of five separate parts, spreading from Bratislava up to Veľkolélsky island.

Biskupické luhy represent a separate first part of the CHKO. They are characteristic with stands of hardwood inundated forests and in particular specific communities of xerothermic biotopes of the Danube forest steppe/Danube hawthorn growth *Asparago-Crataegetum*. This variety of natural conditions is demonstrated in the plentiful representation of plant and animal species, out of which many are rare and endangered. There are other following important small-area protected territories with 4th and 5th grade of nature protection according to the Act of the National Council of the Slovak Republic N. 543/2002 Coll. on nature and landscape protection in this part of the CHKO.

Preserved Area: Bajdel'; land register: Podunajské Biskupice; affiliations to CHKO Dunajské luhy; the subject of protection is the protected area declared for the purpose of the monitoring of the development of White Poplar (*Populus alba*) stand on the Podunajská nížina Lowland in the proximity of Bratislava, important from scientific and research, as well as educational point of view. It is the original hardwood inundated forest - elm and ash stand - with characteristic herbaceous undergrowth.

Preserved Area: Hunting Forest; land registry: Podunajské Biskupice; affiliation to the CHKO Dunajské luhy. The preserved territory is established for the purpose of the monitoring of the development of White Poplar (*Populus alba*) stands on the Danubian Lowlands, important from scientific and research as well as educational point of view.

Natural Reserve: Gajc; land registry: Podunajské Biskupice; affiliation to the CHKO Dunajské luhy. The purpose of the declaration of natural reserve is the assurance of the protection of the biotope of steppe vegetation directly bordering with inundated forest

Natural Reserve: Kopáč Island; land registry: Podunajské Biskupice; affiliation to the CHKO Dunajské luhy. The protected territory is declared for the protection of a mosaic of specific steppe and forest-steppe communities of inundated forests and for scientific and research, educational and cultural and pedagogical objectives.

Natural Reserve: Topoľové hony; land registry: Podunajské Biskupice; affiliation to the CHKO Dunajské luhy. The protection of xerothermic Pannonian oak stands and plant communities with European Bladdernut (*Staphylea pinnata*).

Natural Monument: Panský diel; affiliation to CHKO Dunajské luhy. The subject of protection is the Danube area, hitherto preserved as forest steppe, with the occurrence of extraordinary rare, critically endangered Orchid species – Bug Orchid (*Orchis coriophora*), Green Winged Orchid (*Orchis morio*) and other species.

Dunajské Luhy is also the internationally important **wetland area** according to Ramsar Convention on Wetlands – Ramsar Location Dunajské Luhy (date of registration: 26.5.1993). Dunajské luhy are also the part of Emerald network (the territory of a special conservation interest), the objective of which is the protection of free-living organisms and their natural biotopes, while it requires the cooperation of several countries.

The reason for the registration of Dunajské luhy amongst the internationally important wetlands was the existence of the system of river branches and oxbow lakes in the Slovak-Hungarian section of the Danube that belongs to the greatest inland deltas in Central Europe and is the representative and rare example of natural and nature-close type of wetland in the Pannonian area. A large amount of rare, vulnerable and/or endangered plant and animal species or communities live on the territory. It is the biotope for many endangered and rare birds and mammals. More than 20,000 water birds regularly occur on the territory and large amounts of Podicipediformes, Ciconiiformes, Anseriformes, Gruiformes, Pelecaniformes and Charadriiformes bird species stay here during a season.

They determined 62 taxons of fish (85% of ichthyofauna of Slovakia) in the Slovak section of the Danube and the branch system is an important spawning ground.

Two protected trees are registered in the assessed territory.

Protected Tree- Pedunculate Oak in Dunajská Lužná S 481 (*Quercus robur* - declared by the Generally Binding Regulation of the Regional Authority in Bratislava No. 6/2002 of 21.10.2002) – in the cadastral area of Jánošíková on plot of land No. 99/1 and 103/1.

Protected Tree - Novolipnice Plane S 233 (London Plane – *Platanus hispanica Munchh.* - declared by the Generally Binding Regulation of the Regional Authority in Bratislava No. 1/1996 of 12.11.1996) – in the cadastral territory of Nová Lipnica on the backyard of a family house No. d. 356.

A part of the territory is also the proposed **Territory of the European Importance SKUEV0295 – Biskupické luhy within the European system of protected territories – Natura 2000** (Decree of the Ministry of Environment of the Slovak Republic No. 3/2004-5.1 of 14 July 2004, establishing the national list of the Territories of the European). The Slovak-Hungarian section of the Danube is internationally important avian territory (IBA) is the part of the proposed **protected avian territory of Dunajské luhy – SKCHVÚ007** (in accordance with Article 26 Para 1 of the Act), entered into the National list of the protected avian territories, approved by the Resolution of the Government of the Slovak Republic No. 636 of 9.6.2003. In the proximity of the route of R7 is also:

- **the territory of the European importance SKUEV0295 Biskupické luhy**

The territory is proposed for the reason of the protection of biotopes of the European importance: Thermophilic Pannonian oak forests (91H0), the Carpathian Pannonian oak and hornbeam forests (91G0), the Inundated oak-hornbeam and ash forests alongside lowland rivers (91F0) and the species of the European importance: Great Capricorn Beetle (*Cerambyx cerdo*), Stag Beetle (*Lucanus cervus*), Dioszeghyana schmidtii, Bullhead (*Cottus gobio*), Danube Ruffe (*Gymnocephalus baloni*), Kessler's Gudgeon (*Gobio kessleri*), European fire-bellied Toad (*Bombina bombina*) and Eurasian Beaver (*Castor fiber*).

- **the territory of the European importance SKUEV0270 Hrušovská zdrž**

The territory is proposed for the reason of the protection of the species of the European importance: Stag Beetle (*Lucanus cervus*), Pigo (*Rutilus pigus*), Bullhead (*Cottus gobio*), Streber (*Zingel streber*), Danube Ruffe (*Gymnocephalus baloni*), Tubenose Goby (*Proterorhinus marmoratus*), Amur Bitterling (*Rhodeus sericeus amarus*), Kessler's Gudgeon (*Gobio kessleri*), White-finned Gudgeon (*Gobio albipinnatus*), Golden Spined Loach (*Sabanejewia aurata*), Schraetzer (*Gymnocephalus schraetser*), Asp (*Aspius aspius*),

Sabre Carp (*Pelecus cultratus*), European Fire-bellied Toad (*Bombina bombina*) and Eurasian Beaver (*Castor fiber*).

- **the protected avian territory SKCHVU007 Dunajské luhy**

Declared for the purpose of the assurance of a favourable condition of the biotopes of bird species of the European importance and the biotopes of migrating bird species of: Black Stork, Sand Martin, Little Bittern, Mediterranean Gull, Black Kite, Common Goldeneye, Red-crested Pochard, Common Pochard, Tufted Duck, Garganey, Gadwall, Common Redshank, Western Marsh Harrier, Tawny Pipit, White-tailed Eagle, Smew, Common Tern, Common Kingfisher, Little Egret and the assurance of the conditions for their survival and reproduction. The protected avian territory is declared also for the purpose of the assurance of a favourable condition of the biotopes and the assurance of conditions for survival and reproduction of migrating water birds, the birds creating groups during migration or wintering.

Protected water supply territory (CHVO) Žitný ostrov – the area of Rye Island is important from the point of view of the occurrence of ground water used for supplying the inhabitants with drinking water. Therefore all the activities carried out in the territory should be in accord with the protection of this area of natural accumulation of water.

- **The zone of hygienic protection of grade I and water source of Podunajské Biskupice**

It limits and restricts the development of activities, despite that the source is not used (accidental source pollution with oil substances), but it is a local bio-centre.

- **The protective zone of the sources of natural healing water of grade II- Čilistov** – all the activities carried out in the territory should be in accordance with the protection of sources.

- **The zone of hygienic protection of grade I of water source ZIPP, Dunajská Lužná plant**- this is used water source with just PHO of grade I.

The Territorial System of Ecological Stability

The Regional ÚSES for Bratislava was processed (Králik et al., 1994) and subsequently re-assessed within the urban planning documentation for the Urban Plan of a Great Territorial Unit of Bratislava Region (Klaučo et al., 1998) and the Up-date of Elements of the RÚSES of the city of Bratislava (SAŽP 2005).

A bio-centre is an ecosystem or ecosystem group that creates permanent conditions for reproduction, hiding and feeding of live organisms and for the preservation and natural development of their communities. From the point of view of hierarchy and importance, there are the bio-centres of supra-regional, regional and local importance in the monitored territory.

Supra-regional bio-centres (nrBc)

– It represents the complex of conserved inundated forests at both banks of the Danube under Bratislava. The area of this bio-centre was permanently reduced by ca 5,000 ha of forest stands due to the construction of waterworks Gabčíkovo. The contemporary area of the bio-centre and high level of its impairment do not provide the conditions for permanent survival of several species that occurred there in past (e.g. Deer, Beaver, Otter, Badger, and White-tailed Eagle). In order to ensure the function of the supra-regional bio-centre, its revitalisation and extension by the missing area to the detriment of arable land shall be necessary. The extension of the bio-centre is proposed in the location to the South of Slovnaft refinery towards Dunajské luhy (the Update of Elements of the RÚSES of the city of Bratislava (SAŽP 2005). In addition to this space, the RÚSES of the city of Bratislava (SAŽP, 1994) proposes also the expansion to the South-west from the villages of Rovinka and Dunajská Lužná towards the Danube river.

Regional Bio-centres (rBc)

- rBc Topoľové hony - the gene pool location of fauna, its core forms the Natural Reserve Topoľové hony,

- rBc Kalinkovo – Okrúhle is formed by forest stands. It is the gene pool location of fauna and flora, it is the part of CHKO Dunajské Luhy.

Local Bio-centres (IBc)

- mBc1 – a local bio-centre in the location Kamenný pasienok. It is formed by the remnants of the community of transitional and hardwood inundated forest with a significant representation of tree, bush and herbaceous individuals of the biotope type. High-valued ecostabilisation element with necessary protection by law.
- mBc2 – a local bio-centre in the location Les, it is an old Danube branch with a rich vegetation of transient and hardwood inundated forest.
- mBc3 (Lučina) – the local bio-centre in the location Prípor, in the part of an old Danube branch, with tree and bushy vegetation of hardwood inundated forest up to xerothermic oak stand.
- mBc4 – the group of tree and bush vegetation, the part of a regional bio-corridor. The contemporary wood species composition (Poplar, Black Locust) must be gradually changed to hardwood inundated forest.
- bio-centre in the PHO I. of water source of Podunajské Biskupice.

The bio-corridors may be characterised as spatially interconnected set of ecosystems that connects the bio-centres and allows the migration and exchange of genetic information of live organisms and their communities, spatially followed by interaction elements. From the point of view of hierarchy and importance, there are the bio-corridors of provincial, supra-regional, regional and local importance in the monitored territory.

Provincial (supra-regional) bio-corridor (pBk, nrBk)

- pBk Danube – it covers the watercourse of the Danube river with adjacent swamp communities and the complexes of inundated forests of willow, poplar and lowland inundated forests, it connects the important locations of the bio-centres alongside the Danube and its wider surroundings. The corridor is interrupted two times in the area of Bratislava, in the area of Hrušov embankment and in the area of the city itself. It is necessary to restore its function by extension of the supra-regional bio-centre of Bratislavské luhy.
- nrBk Topoľové hony – Rovinka – Little Danube - a revitalisation (creation) of the bio-corridor is necessary, it should provide for the interconnection between Dunajské luhy and the Little Danube.

Regional Bio-corridor (rBc)

- rBk XVI - regional bio-corridor of the Danube – the Little Danube river

Local Bio-corridors (IBc)

- mBK – they are located usually on the areas of the existing line vegetation and they interconnect the regional and local bio-centres

The locations important as gene pools are represented by the countryside areas with nowadays recorded species important from gene pool standpoint (the protected species and species entered into red books). Flora and fauna is the riches on these locations in the monitored territory that was still preserved in the environment with very heavy anthropic pressure. The most significant gene pool locations are located alongside the Danube river stream. These areas create the suitable preconditions not only for an abundant occurrence of flora and fauna species, but also for the migration of biota to the entire surrounding area. As a matter of fact, they are identical with the other preserved locations. **Gene resource location of fauna Dunajská Lužná**, being important from the point of view of bird occurrence, belongs to such locations in the territory.

Population

The proposed activity is located in the capital city of the Slovak Republic, Bratislava, municipal part of Bratislava – Podunajské Biskupice, the villages of Rovinka, Dunajská Lužná a Miloslavov. Bratislava is from the point of view of daily present population a significant centre of arrival to job, school, etc. It is an administrative, organisational, economic and transit city of the Slovak Republic. It is an important centre of domestic and foreign tourism. This fact causes the increase in the present population by 40% of the count of permanently residing inhabitants.-

From the point of view of territorial and administrative segmentation of Slovakia, the villages of Rovinka, Dunajská Lužná and Miloslavov are located in the district of Senec belonging to the Upper-tier Territorial Unit of Bratislava Region. The development of the population of villages is characterised with various development waves, of both progressive and regressive character. It was affected by administrative and political as well as social conditions, the investment activity in housing development and the financial policy of the state and the city of Bratislava. The dynamisation of the development of sub-urbanisation belt of the surroundings of Bratislava recently accelerated the requirements regarding the territorial development of villages in the close contact with city agglomeration and the requirements in particular for living and making business, which had an impact also on the demography of the concerned villages. Since the middle of the 1990s, significant changes in demographic development are shown in Bratislava and its surroundings. They are the reflection of the current social and economical situation.

Cultural and Historical Values of the Territory

From amongst the cultural and historical monuments located directly in the concerned territory, we must mention the original anti-flood protective dam (built in the period of the Austria-Hungary, under the rule of Maria Theresa) as the part of secondary anti-flood line (Hornožitnoostrovná dam), from Podunajské Biskupice towards Hamuliakovo. After putting the waterworks of Gabčíkovo into operation in 1992, this embankment has become non-functioning and its function was taken over by the left-side embankment of Hrušov pool. The given section of the original embankment was declared by the Ministry of Culture of the Slovak Republic to be the protected cultural and technical monument (the Resolution of the Ministry of Culture – 954-3 of 22 September 1994).

V. THE ASSESSMENT OF EXPECTED DEVELOPMENT, SUPPOSING THE NON-IMPLEMENTATION OF THE INVESTMENT

The contemporary road I/63 nowadays is not suitable even for minimum required speed of 40 km/hour in its entirety pursuant to STN 736101. In the case the construction would not be made, in addition to the acceptance of damages caused by time loss, it would be necessary to inevitably deal with the dangerous intersection sections and furthermore in particular the residential zones of the villages from the point of view of capacity (extension to 4-lane), the contact with pedestrians and noise and exhalates load.

The supposed noise load of the inhabitants with vibrations would be unambiguously multiplied due to the increase in the intensity of transport on the existing communication, while the project of anti-vibration and anti-noise measures is practically hardly feasible.

With the growing intensity of transport on road I/63, also the accident rate shall increase in the villages of Rovinka and Dunajská Lužná, where there is an intensive movement of pedestrians and transport services related to the existing operation premises. It is practically impossible to turn t the left or join the line from the local communications at the time of traffic peak, which also induces stressful situations for drivers.

The objective of the proposed activity is to decline the transport outside the built-up areas of the concerned villages, which would contribute to the remedy of unsuitable technical

parameters and the reduction of negative impact of transport of environment in the considered territory.

VI. OBSERVATION OF THE ACCORD OF THE ACTIVITY WITH URBAN PLANNING DOCUMENTATION

From conceptual point of view, the designed construction of expressway R7 in the section of Bratislava - Dunajská Lužná, as the part of R7 in the section of Bratislava - Lučenec, in accordance with the Resolution of the Government N. 882/2008 of 3 December 2008.

The Urban Planning Documentation of the Upper-tier Territorial Unit of Bratislava Region (elaborated by AUREXX, s.r.o., 2008) states in **the summary wording of amendments and supplementation 2000, 2002, 1/2003 and 01/2005**: In accordance with the approved Concept of Transport Development (approved by the Resolution of the Government of the Slovak Republic No. 166/1993), they consider to reserve the space for the construction of so called South route as a road of supra-regional character as expressway with 2 lanes and view of 4 lanes in the direction of Bratislava - Nové Zámky - Veľký Krtíš - Lučenec - Košice. In the proposal of the ÚPN of the Upper-tier Territorial Unit of Bratislava Region, the expressway R7 is lead from the intersection with highway D4 (by zero circuit) in the direction – Rovinka South bypass – Dunajská Lužná South bypass – the border of Bratislava region with Trnava region.

The proposed route i in accordance with the ÚPN of the Upper-tier Territorial Unit of Bratislava Region.

The condition of urban planning documentation of the affected cities and villages:

Bratislava – – the route of expressway R7 in variant A - red is demarcated in the urban plan of the capital city of the Slovak Republic, Bratislava.

Rovinka – the route of expressway R7 in variant A - red is demarcated in the urban plan of the village.

Dunajská Lužná – a territorial reserve is created in the urban plan of the village of Dunajská Lužná for variant A - red and variant C - green.

VII. PROBABLE IMPACT ON TERRITORIES

The proposed construction is located in the territory with valid 1st grade of protection pursuant to the Act of the National Council of the Slovak Republic N. 543/2002 Coll. on nature and landscape protection. There are no territories requiring special protection in the sense of the Act on nature and landscape protection in the route of the proposed highway.

The Most Significant Impacts of the Activity on Environment Component and the Measures for their Reduction or Elimination

Impacts on Rock Environment

In the territory that is intensively used by industry and also agriculture, we may expect the contamination of rock environment as the consequence of anthropogenic activity.

The direct and indirect impacts of the proposed activity on rock environment and relief may be classified as:

- The interference with the rock environment and relief by the body of expressway as a direct impact,
- Possible pollution of rock environment as indirect impact.

The interferences with rock environment and relief represented in particular by high fillings and bridge objects may be characterised as a permanent, irreversible and long-term impact.

With regards to the longitudinal profile and the number of bridges, the interference with rock environment by earth works is of no significant negative direct impact, since the territory is stable without active geodynamic phenomena (erosion, landslip territories, etc.).

The presence of well-permeable soils, however, indirectly conditions the possible pollution of rock environment during the construction of expressway and also during its operation when it comes to the collision of vehicles transporting hazardous substances, which might be characterised as emergency situation. In the case of their activation, they would cause permanent, irrevocable condition and induce other costs of necessary improvement.

From amongst the favourable impacts of the construction and operation of the road, we may mention the optimisation of the routing the communication from the point of view of the interference with rock environment and relief and the prevention of activation of nowadays identified geodynamic processes by suitable technical measures.

Impacts on Climatic Conditions

The construction would not induce the changes in the elements of local climate, or the possible change induced by the construction would not be proved. The changes in microclimate that would be more significant (due to the field modifications, etc.) shall rather affect the work itself or the activities related to its operation.

Impacts on Air

In the stage of construction, they expect temporary, short-time increase in air pollution with immissions from motors of transport and construction mechanisms when transporting the materials on the existing road network passing through the settlements, the increase in secondary dustiness due to the field modifications and earthworks, lading and transport of earth. This impact is temporary and limited to the period of construction.

In the stage of operation, the quality of air shall be, similarly as till now, affected by exhalates and dustiness caused by transportation by cars, as well as solid pollutants during winter spreading. According to calculations for average annual concentrations, the contribution to air pollution with considered exhalates generated from the supposed traffic load with regards to the relevant limit is minimal.

Nowadays, the most loaded communication from traffic and emission point of view in the monitored territory is the road I/63. It shall be relieved by the load that shall be taken over by expressway R7. Thus they expect the reduction of harmful substances from automotive transport in the villages passed by the entire transit nowadays.

On the basis of the calculated immission load by harmful substances from traffic in the horizon of 2030, we may state that after putting this construction to operation the maximum allowable concentrations of harmful substances (CO, PM and NOx) shall not be exceeded from transport in its surroundings.

Impact of Noise

Upon the construction of expressway R7, they expect also the change in the noise conditions alongside the road I/63. It shall come to the reduction in the intensity of transport over the contemporary situation and thus also to the reduction of noise load from traffic on the close proximity. At the same time, the noise load shall be moved to the route of the newly constructed expressway.

On the other hand, we expect the increase in noise emission in the surrounding of newly constructed expressway. According to the results of noise study, it shall come to the exceeding of the allowed hygienic noise limits at daytime and night-time in some locations on R7 on the basis of the supposed intensity of traffic. For the purpose of the elimination of noise load, anti-noise measures in the form of anti-noise walls are proposed in the following sections:

Anti-noise wall at km 2.855 of R7 - 0.180 of branch 5 to the right

Anti-noise wall at km 3.185 - 4.565 of R7 to the left

Anti-noise wall at km 0.070 - 4.565 of R7 to the right

Anti-noise wall at km 7.555 - 9.210 of R7 to the left
Anti-noise wall at km 9.655 - 11.250 of R7 to the right
Anti-noise wall at km 11.000 - 13.100 of R7 to the left
Anti-noise wall at km 12.150 - 13.880 of R7 to the right
Anti-noise wall at km 15.270 - 16.630 of R7 to the left
Anti-noise wall at km 16.085 - 16,883 of R7 to the right
Anti-noise wall at km 16.915 - 17,026 of R7 to the right

The construction of anti-noise walls shall ensure the achievement of the allowed noise level in the built-up parts of the concerned villages.

Impact on Surface Water

The contamination of water running from the surface of the road is caused by the contents of the entire range of pollutants, while waste water may have a negative impact on quality of ground water in particular. The intensity of the impact shall depend upon the concentration of pollutants, climatic and hydrogeological conditions. With regards to the fact the construction is not in contact with surface water and road drainage system, the negative impacts on surface water are not supposed during both operation and construction.

Impacts on Ground Water

The considered territory belongs to the CHVO Žitný ostrov, for this reason it is necessary to pay an increased attention to the protection of ground water. On the basis of these limits, road drainage system is proposed for the entire section with the treatment of released water, which in the common operation provides for the protection of the ground water resources in the territory against negative impacts.

However, in the construction stage the deterioration of quality and regime of ground water is possible, in particular during earthwork and bridge engineering works that may interfere with the collector of ground water.

Natural Healing Water of Čilistov

The construction interferes also with the protective zone of level II of Čilistov. With regards to hydrogeological collector of the water, we do not suppose impact on the resource. However, it shall be necessary to observe the relevant legal stipulation when making and operating the structure in the protected zone.

Impacts on Soil

The basic negative impact on soil is its seizure by the bod of intersection layers and temporary seizures, material dumping areas and construction yards. The negative impact may occur in the stage of construction on temporary seized grounds. During the construction, the construction activity and relate human activities may cause the following negative changes in the quality and stability of concerned soils:

- a) Degradation (decomposition) of the structure aggregates of soils, on which the construction mechanisms and means of transport would drive (handling belts and their immediate surroundings, construction yards).
- b) Speeding-up of erosion processes due to the in.depth interferences in the slope relief, with the presence of luvisol pseudogley and cambisols with high level of erodibility and unfavourable structure condition.
- c) Beating (compaction) of the soil profile in its root zone, caused by the compaction by construction and heavy transport mechanisms having a negative impact on the overall physical condition of the soil, the biological and chemical processes and water-air regime of the soil.
- d) Intoxication of soil with the components of exhausting products, in particular polycyclic aromatic carbohydrates (PAU) that are the products of combustion in diesel motors. In

the case of exhaust-emission output, a contamination is possible up to the distance of 10 m from the source.

- e) Nitrate (NO_x) accumulation in humus horizons of soils at the distance up to 10 m from the construction and in plants grown on these soils. In the case of agricultural soil, this impact is up-to-date in particular in the case of fluvisol soils, glei phaeozem, rendzina and pararendzina, where there is a reversible change, remediable by biological re-cultivation of the soils.
- f) The potential risk factors of soil intoxication is also the point pollution of soils with oil substances and motor oils that may be expected on the territories of handling belts and construction yards and in their immediate proximity.

Impact on Fauna, Flora and their Biotopes

The linear constructions represent a considerable risk for biodiversity preservation. It may be endangered directly (by species vanishing from destroyed or degraded biotopes) and indirectly (e.g. the loss of food sources for some species, their isolation and impossibility to overcome the distance between the natural biotopes). When the biotopes and populations living in them are fragmented to small groups and the interconnection between them is impaired, their long-term existence is disturbed. Recently, also the impact of noise is significant, it must be also defined as unfavourable.

When assessing the impact of the proposed activity, it shall be necessary to consider also the supposed direct, indirect, secondary, cumulative, synergic, short-term, temporary, long-term and permanent impacts and the impacts induced during the construction of the proposed activity and during the operation of the proposed activity.

In addition to the impacts during the operation of expressway R7, it shall be necessary to consider also the impacts induced during the construction of the proposed activity. An excessive disturbance shall affect practically all the species in the given territory. Disturbance during construction (noise, dustiness, vehicle drives, construction yards and temporary depositories and material dumping sites, etc.) shall restrict the use of optimum food biotopes, the possibilities of hiding while being disturbed in the forest complex of Biskupické luhy for some species. For sensitive species, such as Black Kite (*Milvus migrans*), this activity may lead to the prevention of nesting in the disturbed environment or even the ruination of nesting in progress in the stage of egg-laying.

The negative impacts on fauna, flora may be expected in the territory where the construction passes in an immediate proximity of extraordinary valued territory of Dunajské luhy.

There is a precondition that even the complete implementation of possible measures for the mitigation of negative impacts (road fencing, non-transparent anti-noise walls, ecoducts - passages for animals over the communication) would just partially deal with the worsening of migration.

It shall come to the direct seizure and liquidation biotopes only to a minimum degree, when crossing the river channel of the former Danube branch. There is a biotope Ls +.2 Oak-elm-ash lowland inundated forests (the biotope of the European importance 91 F0) in this section. Even more serious impact than the direct seizure of the biotopes is however the fragmentation and isolation of the existing biotopes and ecologically important segments of the country.

Impacts on the Protected Territories and Their Protected Zones

Impacts on the protected natural territories and Natura 2000 territories

The expressway passes in a contact with large-area (Rural Conservation Area Dunajské luhy) and small-area (Natural Reserve Topoľové hony) protected areas at the length of 1.5 km, while it approaches also the protected territory included to the Natura 2000 system in that section. This is the Territory of the European Importance SKUEV0295 - Biskupické Luhy and Protected Avian Territory SKCHVÚ007 - Dunajské Luhy. Dunajské Luhy is also the internationally important wetland territory according to Ramsar Wetland International Agreement.

Impact on the Rural Conservation Area (CHKO) Dunajské luhy

Damage to part 1 of the CHKO - noise, pollution, migration barrier, the fragmentation of non-built-up area, the liquidation of trophic biotopes and migration corridors of game living mainly in the territory of the CHKO. The liquidation of the sanctuaries and resting territories (and access to them) used by the game while being disturbed in the CHKO.

Impact on the Natural Reserve Topoľové hony

Indirect interference - noise, pollution, migration barrier.

Impact on the Protected Avian Territory Dunajské luhy

The loss of hunting biotopes of Western Marsh Harrier (*Circus aeruginosus*) and Black Kite (*Milvus migrans*) species. The loss of trophic biotopes – Wild Geese (*Anser spp.*) pastures. The increase in the disruption on potential nesting grounds (the loss of potential nesting grounds) for Black Stork (*Ciconia nigra*), Black Kite (*Milvus migrans*) and White-tailed Eagle (*Haliaeetus albicilla*) species.

Impact on the Territory of the European Importance Biskupické luhy

An interference in the peripheral part – long term upset – noise, pollution, the violation of migration corridors, direct death of animals.

Impacts on the Territorial System of Ecological Stability

From amongst the identified impacts on the Territorial System of Ecological Stability, it is possible to state the following from the **supra-regional and regional** point of view:

- The route passes at the border of the supra-regional bio-centre (NRBC) Bratislavské luhy and the regional bio-centre (RBC) Topoľové hony at the length of 1.5 km. At the same time, it passes through the proposed expansion of the NRBC Bratislavské luhy, whereby it practically makes it impossible to implement the proposed expansion NRBC Bratislavské luhy to the south-west of the villages of Rovinka and Dunajská Lužná towards the Danube river.
- The route directly crosses the supra-regional bio-corridor (NRBK) Topoľové hony - Rovinka - the Little Danube and the fauna gene pool location of Dunajská Lužná.
- The route intersects a significant local bio-corridor connecting the local bio-centre mBc 3 Lučina with rBc Topoľové hony, or bio-centre in the PHO of the water source of Podunajské Biskupice, the bio-corridor provides for the approach also to a "small lake" in Rovinka.
- At km 1.5 - 2.3, the route passes in the proximity the local bio-centre mBc 3 Lučina in the location named Prípor, forming the part of the old Danube branch grown with tree and bushy vegetation of hardwood inundated forest to xerothermic oak forest type,
- The route intersects the significant local bio-corridor connecting the local bio-centre mBc 3 Lučina and the local bio-centre mBc 1 in the location named Kamenný pasienok, formed by the remnants of the community of a transient and hardwood inundated forest with a significant representation of tree, bushy and herbaceous individuals of this biotope and the water area of former gravel pit between them.
- At km 3.1 and 4.0, the route crosses the local bio-corridors in the territory of an old embankment.

The Impacts on Cultural and Historic Monuments

The expressway crosses the **protected cultural and technical monument** - the original anti.flood protective dam (built in the period of Austria-Hungary under the rule of Maria Theresia) as the part of secondary anti-flood line (Upper Rye Island dam Hornožitnoostrovná hrádza).

The Impacts on Archaeological Dig Sites

The impacts on the cultural values of an immaterial value: the assessed activity has zero impacts.

The Impacts on Palaeontological Dig Sites

No significant palaeontological dig sites and geological fields were found in the monitored territory.

VIII. SUBSTITUTE AND MITIGATING MEASURES

The substitute and mitigating measures represent the compensation of a damage, the most frequently proprietary, economic and environmental one.

In the social and economic sphere

A close cooperation of the investor, structure supplier and the concerned villages is supposed to take place during the construction of the expressway with the aim to minimise the unfavourable impacts of the construction on the inhabitants of the concerned territory. It shall be necessary to deal with the provision of the consent with passages of heavy construction mechanisms and machines through the village residential areas and to determine the conditions for transport on the agreed routes, within which it shall be necessary to assure maintenance (cleaning, spraying in order to reduce dustiness) and the subsequent repair of the sections damaged by the passage of heavy mechanisms. An agreement shall be necessary on selected routes within the assurance of the fluency and safety of road traffic (speed and entry limits, etc.) as well as safety and mitigation of negative impacts on the quality of life of the concerned inhabitants (e.g. the exclusion of passages in the proximity of quarters at nights, during holidays, etc.)

A tender field are proprietary damages of the concerned inhabitants. The mitigation of this impact is possible only by an adequate compensation of the losses corresponding to the requirements of the concerned population in accordance with the valid legal regulations (the Regulation of the Ministry of Justice of the Slovak Republic No. 492/2004 Coll. n the specification of general property value as amended), individually in close cooperation with the investor of the structure, the concerned citizens and municipal council.

for the seizure of agricultural land

The compensations regarding lands result from the relevant legislation regulations, in particular the Act No. 220/2004 Coll. on the protection and utilisation of agricultural land and on the amendment of the Act No. 245/2003 Coll. on integrated prevention and control of environment pollution and on the amendment and supplementation of some acts, or the Act No. 219/2008 Coll. amending and supplementing the Act No. 220/2004 Coll.

for cutting of wood species growing outside a forest

The compensations for cutting of wood species shall be dealt with in accordance with the Act of the National Council of the Slovak Republic No. 543/2002 Coll. on nature and landscape protection and the implementing Regulation of the Ministry of Environment No. 24/2003 Coll- according t which the social value of wood species is set (or in accordance with the Regulation of the Ministry of Environment of the Slovak Republic No. 579/2008 Coll amending the Regulation of the Ministry of Environment of the Slovak Republic No. 24/2003 Coll). The nature protection authority (the municipality) shall determine the conditions for wood species cutting and the conditions for the compensation for the disposed of wood species in the form of a replacement planting or the payment of a financial amount at the amount of the social value of the disposed of wood species in the wood species cutting permit.

IX. THE COMPARISON OF DESIGN VARIANTS

The construction of expressway R7 was assessed in accordance with the Act on impact assessment at the end of 2008. The Final Opinion of the Ministry of Environment of the Slovak Republic Expressway R7 Bratislava - Dunajská Lužná was issued on 9 May 2009.

The Final Opinion states the following on the basis of the conclusions of the complex assessment of the proposed activity: „ However, several negotiations that took place during the elaboration of the Report on the Assessment Opinion implied the concerned parties did not reach a consensus on the complex solution of the connection of R7 to the communication system of the city of Bratislava, which prevents the Ministry of Environment of the Slovak Republic to unambiguously determine the resulting variant. As long as the negotiations at the level of statutory representatives do not come to the conclusion, the preferences of variant A remain higher with regards to the fact it is considered in the planning documents of the capital city for longer period."

In the next technical solution, the selected variant of R7 must consider all measures for prevention, elimination, minimisation and compensation of the impacts on environment in accordance with the Final Opinion and valid legislation of the Slovak Republic.

The Final Opinion recommended modifications that were projected into the zoning and planning decision documentation. There are following differences between the originally assessed variant and the variant dealt with in the zoning and planning decision documentation stage:

- The change in the location of expressway R7 and the change in the category of the expressway,
- The changes in the intersection objects,
- The changes in the objects of road relaying and road reconstructions,
- The objects of relaying and reconstruction of roads within zoning and planning decision documentation that were not stated in the Assessment Report (EIA),
- Changes in bridge objects,
- Changes in relaying of buried services that were implied by the detailed geodetic aiming, objections of network administrators and the coordination with the other objects of the given structure, and
- Changes in anti-noise measures,

The most notable output of the change in the proposed activity is the expressway R7 shall be in comparison to the original route (assessed in the EIA):

- Shall be shifted further from the CHKO Dunajské Luhy to the distance of ca 159 m to 200 m, in accordance with the recommendations of the Final Opinion of the Ministry of Environment of the Slovak Republic,
- The expressway shall be built in category R 31,5/120, with four-lane width arrangement, i.e. with wider central separating zone so that it would be prospectively possible to broaden it to 6-lane one towards to axis of the expressway.
- The range of anti-noise walls shall be increased in a significant way (increase by 2,115 m), which results from the up-date of the noise study in accordance with valid law,
- Multifunction barriers from the side of Biskupické luhy shall be erected in the section from km 0.500 – 2.500 R7 (zoning and planning decision documentation) to the right, in order to prevent the game from entering the road, to prevent glare of the game and the protection of game against noise from the side of Biskupické luhy (from km 0.500 – 2.500 R7 (zoning and planning decision documentation) to the right). This technical solution shall be a subject of another stage of project documentation of DSP.
- a notable change is the measures for the assurance of connectivity of the country and the migration of game in the most exposed sections. The presence of a notable bio-corridor of supra-regional importance Topolové hony – the Little Danube and other corridors of lower hierarchic importance requires the assurance of collision-free passage for game through the expressway R7. Therefore 2 ecoducts and a bridge above the migration route of the game are proposed in the project zoning and planning decision documentation:
 - Object 203 Ecoducts at km 1.799 of R7 – overpass having the length of 50m above the expressway R7 with the overall width of contact ca 121m,

- Object 204 Ecoducts at km 3.333 of R7 – overpass having the length of 50m above the expressway R7 with the overall width of contact ca 110m,
- Object 208 Bridge on R7 at km 6.800 above the migration route of the game – with clear height of 13m and passage clearance of 4.65 m.

The other grade separated passages for small game and animals through the expressway R7 shall be possible through the designed water gates:

- At km 1.510, pipeline water gate DN 1200, length of 40.2 m for small, medium-sized mammals and amphibians.
- At km 2.383, framework water gate IZM 240/220, length of 34.1 m for small, medium-sized mammals and amphibians.
- At km 6.050, framework water gate IZM 240/240, length of 34.9 m for small, medium-sized mammals and amphibians.
- At km 6.450, framework water gate IZM 240/240, length of 41.1 m for small, medium-sized mammals and amphibians.

in addition to significantly positive impacts on the relevant components of environment, the given changes shall affect the visual aspect of the monitored territory. The other outputs pursuant to the originally assessed range of the proposed variants in comparison with the change in the proposed activity are in principle identical (air pollution, wastes).

Health Risk Assessment

The proposed changes in activity (anti-noise measures) shall contribute to the improvement of the quality of environment in the concerned villages and to the elimination of health risks.

All the changes took place in the process of the preparation of project documentation for the construction as the result of the optimisation of the route on the basis of the conditions of representatives of concerned villages, authorities and professional organisations, authorized to express themselves to the technical solution of the proposed construction. The given changes in the position of expressway lead to the changes in the detail design of other objects.

The route of projected expressway is lead in the corridor of the variant with higher preferences obtained from the Final Opinion of the Ministry of Environment of the Slovak Republic of 9 May 2009.

From point of view of water sources, the implementation of the intention does not suppose more significant interventions in qualitative and quantitative parameters.

The route of the variant as well as the proposed change is located in the territory, in the proximity of large-area and small-area protected territories. The construction is located in the proximity of the territories of the European importance and the protected avian territory.

A significant change in the relation to the population, is the up-dating of the scope of anti-noise measures. Overall, the extent of anti-noise walls has been significantly enlarged (the increase by 2,115 m). The changes in the proposal of anti-noise measures resulting from the changes in the legislation regulations and comments of the affected municipalities. The objects of the anti-noise walls are integrated in the object of the expressway R7, they do not constitute any new seizure of areas by themselves. From the point of view of the protection of inhabitants against the unfavourable effects of noise, they represent a significant positive impact.

The amendments in the proposed activity may be positively assessed, since the traffic situation in the territory shall be improved and the safety of transportation and population shall be significantly improved. The positives shall be the most significantly experienced by the inhabitants of villages the transit transportation leads through nowadays. Through the implementation of vegetation rearrangements, the technical work shall be incorporated in the landscape, which shall positively affect the scenery of the territory.

Thus the amendment in the proposed activity does not represent a principal change in the option. When compared to the originally assessed extent of the variant options, the impacts on the population and environment may be assessed as comparable.

The construction shall be made on the basis of a planning permission. It shall reflex all the conditions of execution so that all legislative conditions leading to the elimination of negative impacts on population would be observed.

Done in Bratislava, June 2013

Elaborated by: Ing. Ján Longa

Disclaimer

This is an English translation of a document that was originally produced in the Slovak language. While we have exercised utmost care to make this translation accurate, it may contain typing or translation errors. Therefore, always consult the Slovak original before making decisions on the basis of this translation.

The name of this document in Slovak is *Netechnické zhrnutie*. The file name has not been changed.

We hereby confirm that the European Bank for Reconstruction and Development shall have no responsibility for the translated content.

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