

NON-TECHNICAL SUMMARY

I. PURPOSE OF THE PROJECT

Section of highway D4 Bratislava, Ivanka North - Rača is a transportation link between the existing D1 highway and II/502 road in the north-eastern part of the capital city of the Slovak Republic, Bratislava. Completion of this section, together with follow-up sections of D4 highway, will divert the transit traffic to Austria and Hungary, which currently passes D1 highway in built-up area. In this particular area it will also help the service of the affected area and relieve the villages and existing road network from transit transport. Upcoming construction of section D4 Bratislava, Ivanka North - Rača is one of the prepared sections of D4 highway.

The given construction of D4 highway is in accordance with the development strategy 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 D4 highway is in accord with the concept of the territorial development of Slovakia (KURS) and with the concept of development of road and highway network of the Slovak Republic.

II. BRIEF DESCRIPTION OF THE TECHNICAL DESIGN

The construction of "Highway D4 Bratislava, Ivanka North - Rača" starts at the junction of existing D1 highway in FOI "Ivanka – North" at the border of cad. area Vajnory/cad. area Ivanka pri Dunaji close to Šúrsky kanál (channel). D4 highway continues in the north-west direction towards the cad. area Svätý Jur, crosses the Vajnorský potok (brook) by bridge, bypasses the lake of Lysec from the western part, crosses c.III/5021 (Vajnory – Čierna voda) ca 300 m from the eastern edge of the existing built-up area of the municipal part BA - Vajnory by flyover, further it continues parallelly with the Šúrsky kanál (channel), by the bridge crosses the Račiansky potok (brook) north-east of the planned CEPIT. Concluding part of the route heads to the vineyard area in the eastern edge of the Little Carpathians, where at the flyover interchange "Rača" it crosses the railway line Bratislava – Žilina and the road II/502 by bridge. The FOI "Rača" is the end of this section of D4 highway. Construction of the follow-up section of D4 highway is scheduled for next phase together with the tunnel "Karpaty" (the Carpathians) in the construction of "Highway D4 Bratislava, Rača – Záhorská Bystrica". Total length of the respective section of D4 highway is 4.400 km.

Highway D4 is projected in the entire concerned section for the design speed of $v_n=120$ km/h with following width arrangement:

- D 33,5 in the section intersection Ivanka North – intersection Čierna voda,
- D 26,5 in the section intersection Čierna voda – intersection Rača

As to the height, D4 highway in the FOI "Ivanka – North" is led below D1 highway, followed by a bridge above the Vajnorský potok (brook) (under the bridge the underpass height of $h=4.20$ m will be ensured), close to the current built-up area of Vajnory in low embankment above the level of current terrain, by a bridge above the Račiansky potok (brook) (under the bridge the underpass height of $h=4.20$ m will be ensured), in km 3.300 D4 in low embankment above the level of current terrain, further by elevated bridge over the railway line Bratislava – Žilina and over the road II/502.

On D4 highway following flyover interchanges (FOI) are projected:

- FOI "Ivanka - North" (is a part of construction "Highway D4 Bratislava, Jarovce – Ivanka North")
- FOI "Čierna voda"
- FOI "Rača"

Location of the construction in the territory

Structural objects will be executed on plots based on geometric plans in cadastral areas Ivanka pri Dunaji, Vajnory and Svätý Jur.

III. CHARACTERISTICS OF THE AFFECTED AREA

Route of D4 highway Ivanka North - Rača is located in Podunajská rovina. The terrain is flat with a slight slope towards the south-east and from geomorphological perspective it is a young structural plane which is forming even today.

The Podunajská rovina Flatland creates the flat aggradation flatland taking over the wide zone alongside the Danube River. The relief here is flat with a slight vertical segmentation.

From the point of view of the typological relief classification, the prevailing portion of the territory is characterised with fluvial relief.

IV. PRINCIPAL CHARACTERISTICS OF ENVIRONMENT

Geological situation

According to the engineering and geological properties the area evaluated belongs to the region of neogene tectonic cavities, area of Inner Carpathian Lowlands – Danubian Lowland, its western edge at the foot of the Little Carpathians.

In this section the subsoil of D4 highway is constructed by marginal sections of alluvial flat of the Danube, which is unequally covered by proluvial, at the foot deluvial sediments with potency of more than 2 - 5 m. In the section of the foot of the Little Carpathians the rock massif consists mostly of effloresced bedrock and loose, deluvial soils with a more distinct potency. In the section of intersection with the Vajnorský potok (brook) the valley is filled with fluvial sediments of mountain course with the filling of clayey and sandy gritty soils.

Geomorphology

With the exception of eastern slopes of the Little Carpathians in the north-western edge of D4 section Ivanka North - Rača the relief of the monitored territory can be characterised as purely flat, on some places eroded by anthropogenic activities (dams, road embankments, gravel pits, etc.).

Altitude in the respective territory of D4 and its immediate surroundings is around 127 m a.s.l. to 135 m a.s.l., the only part of the monitored territory, which is beyond this border, is a location in the surroundings of Rača junction, where maximum altitude is 155 m a.s.l. The relief here is mostly flat.

Climate

The relevant area belongs to warm area, district A1, which is characterized as warm, dry, with mild winters and longer sunshine. The average annual rainfall in the respective territory is 530 to 650 mm, with maximum precipitation in the summer (34.5%). Contrarily, the least precipitation is in winter, in February. The major precipitation deficit is in the growing season, with the highest precipitation amount, but also the highest vapour (800 mm per year on average). In terms of the precipitation amount the territory can be characterized as moderately dry area.

Surface water

The evaluated territory belongs to the Danube basin, which is drained by following streams:

Šúrsky kanál (channel) – draining and irrigation channel, artificially built during world war II, in order to drain water from the Little Carpathians.

Javorník (called also Račí potok) – stream rises between Malý and Veľký Javorník in the Little Carpathians and flows to the Šúrsky kanál (channel), upper stream is not regulated and has a character of a brook, in the part beneath the road II/502 in the section Rača – Pezinok the stream is regulated and channelized. It flows to the Šúrsky kanál (channel) through a stabilisation structure.

Račiansky potok – rises below Krásny vrch (411 m a.s. l.) in the area of the Little Carpathians, it flows through the city district Rača and flows to Šúrsky kanál (channel) north of the municipal part Vajnory. The stream is without a bank vegetation; bushes and trees are only beyond the dam foot, edges of the stream are overgrown with reed, bedrock are overgrown with water plants.

Struha – stream rises in cottage area between vineyards north of Rača and flows to Vajnorský potok (brook). The stream is regulated in the entire length, it is channelized for water collection from vineyards, it does not have a year-round flow and in the bottom part it is a recipient of waste water.

Vajnorský potok (brook) – rises in the Little Carpathians below Biely Kríž and flows to Struha brook. The stream rises in the Little Carpathians, below the hill Biely kríž, in the upper part with a brook character, in vineyards regulated.

Vajnorský kanál (channel) – was constructed as a draining channel south of the city district Vajnory, it is a right-side tributary of Strúha brook.

Stará Blatina – channel between Čierna voda and Šúrsky kanál (channel) without all-year-round flow

Mlynský potok (brook) – artificially built channel between villages Slovenský and Chorvátsky Grob to drain excessive water from surrounding fields, without all-year-round flow

Nameless channel - artificially built channel from Šalaperská hora mountain towards Bernolákovo, flowing into pond without drain east of Bernolákovo.

Water areas

Šúrsky rybník (pond) and swimming pools - are a part of the National Nature Reserve Šúr, one of ponds is former gravel pit. Water areas are used to grow fish, as well as for recreational purposes.

pond on Lysé – close to the crossing of Vajnorský potok (brook) and Šúrsky kanál (channel) it is overgrown with riparian forest and used for fish breeding.

Groundwater

According to the Hydrogeological Regionalisation of Slovakia (Šuba et al., 1984) the wider area of the territory under review is a part of region Q - 051 "Quaternary of the Western Edge of the Flat". The main groundwater collector is the complex of quaternary fluvial sediments – ballasts. The hydraulic properties of gravel are good.

Groundwater has a loose character in the entire investigated section and could be found in the depth of 1.00 to 4.00 m below terrain. General direction of groundwater flow is approximately NW - SE of the direction..

Neogene sediments build a reservoir of geothermal water. Low-temperature geothermal water (42 – 92 °C) is bound to sandstone of Pannonian, Dacian and Pontian age.

Quality and composition of groundwater is influenced in particular by chemical composition of the Danube and Small Danube water, to smaller extent by rain water.

Soils

According to the pedologic research (Lazúrová, 10/2013), on the route of construction **markedly prevailing soils are those ranked to soil type chernice , belonging to sub-types chernice typical and chernice gleyic** , whereas these sub-types interchange in the interest territory of the construction in mosaic way. Besides chernice, on the route of construction, there is a soil type **chernozem** with a sub-type chernozem typical and chernozem chernice-like particularly in the southern part. In the northern part of the section **fluvisoils** shallow and fluvisoils gleyic can be found in one location. Soils in vineyards at the end of the section are classified as **cultisoils** typical and cultisoils cambic.

Soils on the route of construction are predominantly deep to medium deep and - particularly in the southern part of the route without skeleton. In the northern part of the route towards the foot of the Little Carpathians the skeleton increases and on certain places the soils are gritty to shallow.

Based on the results of the pedological survey on the area of the planned taken lands the overburden of humus horizon in the range from 20 to 60 cm is proposed, while at the majority of the route the overburden to a depth of 30 cm is proposed. Humus horizons of the soils concerned are shallow to deep, mostly medium heavy - clayey, with no skeleton up to medium stony.

Flora and Vegetation

Within the project documentation of the zoning and planning decision documentation Annexes Stocktaking and Social Evaluation of Habitats of Community and National Importance, as well as Stocktaking of Trees Growing outside Forests (Zvědelík, 2013) have been elaborated.

Within the research in October 2013 priority habitats of European importance were identified only in one location, it is a habitat **LS1.1 Willow-poplar lowland riparian forests - priority habitat of European importance**, which occurs ca in 2.4 – 2.6 D4 on the planned access road.

In accordance with the legislation if the nature and landscape protection authority notes that by activity the habitat of European or national importance might be damaged or destroyed, for its execution approval of the nature protection authority shall be required.

According to Stocktaking and social evaluation of woods growing outside forests in the route of the proposed D4 highway, there are woods at 39 sites in the cadastres of municipalities Ivanka pri Dunaji, Svätý Jur and Vajnory.

During stocktaking it was identified that trees grow as an accompanying vegetation of roads, watercourses, drainage ditches, trees along the dike of Šúrsky kanál (channel), sparse landscaping greenery in agricultural land, as well as vineyards. During stocktaking a total of 883 pieces of trees and 47,690 m² of bush vegetation were recorded. **Out of this number the consent of the Nature and Landscape Protection Authority is required for 355 pc of trees and 47,690 m² of bush vegetation, whose social value amounts to EUR 608,161.26.**

Fauna

From the zoo-geographic viewpoint (Čepelák, 1980) the territory concerned is included in two provinces, namely Carpathians and Inner Carpathians Lowlands. The route of D4 highway in section Ivanka North – Rača runs through an insignificant territory, which is currently fragmented and disturbed by intensive traffic and increasing number of development projects. This territory provides conditions for permanent occurrence of small animals up to the size of foxes and limited conditions for occurrence of larger animals (deer, wild boar). Much better life conditions for various animal groups are provided by the territory outside the route of the highway, which is also subject to territorial protection. In particular, it concerns Little Carpathians and Šúr.

Special protection areas and protective zones

In the wider territory surrounding highway D4 the following large and small protection areas are located (Act of the National Council SR No. 543/2002 Coll. on Nature and Landscape Protection):

PLA Little Carpathians

PLA Little Carpathians is the only large protection area of the vineyard nature. The territory is largely covered by deciduous forests with oak, common ash, sycamore maple and linden. The thermophilic grassland communities include pheasant's eye, scented grass, greater pasque flower, Lumnitzers Nelke (*Dianthus lumnitzeri*).

The species that occur only here within Slovakia include mouse thorn, scorpion senna, rock buckthorn. The Little Carpathians have a generically very varied fauna (insects, birds, etc.).

The second degree of protection applies to the protected landscape area, unless the Act specifies otherwise (Section 13).

NNR Šúr

Object of protection is the last and greatest remnant of high trunk boggy alder forest, with wet and peaty meadows around its periphery. There are also xerotherm biocenosis. Rich biodiversity at small area, many endangered taxons.

SKCHVU014 Little Carpathians

Protected bird territory was declared for purposes of preserving the habitats of bird species of Community importance and habitats of migratory species of birds saker falcon (*Falco cherrug*), European honey buzzard (*Pernis apivorus*), middle spotted woodpecker (*Dendrocopos medius*), Eurasian eagle-owl (*Bubo bubo*), European nightjar (*Caprimulgus europaeus*), black stork (*Ciconia nigra*), white-backed woodpecker (*Dendrocopos leucotos*), Syrian woodpecker (*Dendrocopos syriacus*), black woodpecker (*Dryocopus martius*), peregrine falcon (*Falco peregrinus*), collared flycatcher (*Ficedula albicollis*), red-breasted flycatcher (*Ficedula parva*), red-backed shrike (*Lanius collurio*), grey-headed woodpecker (*Picus canus*), barred warbler (*Sylvia nisoria*), common quail (*Coturnix coturnix*), Eurasian wryneck (*Jynx torquilla*), spotted flycatcher (*Muscicapa striata*), common redstart (*Phoenicurus phoenicurus*), common stonechat (*Saxicola torquata*), European turtle dove (*Streptopelia turtur*) and eastern imperial eagle (*Aquila heliaca*).

In portal tunnel part the route marginally touches the protected territory,

SKUEV0279 Šúr

For purposes of protection of habitats of European importance the territory was declared as follows: riparian willow-poplar forests (91E0), riparian oak-elm-ash trees around lowland rivers (91F0), molinia meadows (6410), inland salt marshes and salt meadows (1340) and species of European importance: Cirsium brachycephalum (*Cirsium brachycephalum*), great capricorn beetle (*Cerambyx cerdo*), violet click beetle (*Limoniscus violaceus*), large copper (*Lycaena dispar*), stag beetle (*Lucanus cervus*), false eros blue (*Polyommatus eroides*), European fire-bellied toad (*Bombina bombina*), European beaver

(*Castor fiber*), Mehelyi's root vole (*Microtus oeconomus mehelyi*) and Danube crested newt (*Triturus dobrogicus*).

The territory is ca 500 m north of D4 in the range of km 1,500 to 3,500 (area is smaller than National Reserve Šúr).

Wetlands

Wetlands are protected as an important landscape component under Act No. 543/3002 Coll. as amended. At international level the wetlands are in addition to the EU Habitats Directive and the Birds Directive protected in particular by the Convention on Wetlands (Ramsar Convention), to which the Slovak Republic acceded on 1 1. 1993. Under the Ramsar Convention in the cad. area Svätý Jur there is a **wetland of international importance Šúr**.

The route of the designed highway D4 is situated in the territory, where the 2nd degree of protection, i.e. general protection, applies. Higher protection degree territories are located east of the route (NNR Šúr with 5th protection degree and protective zone with 4th protection degree) and northwards it continues by the tunnel route of Little Carpathians, where PLA Little Carpathians is declared with 2nd protection degree.

The Territorial System of Ecological Stability

Supraregional level

In the vicinity of the proposed structure there is a supraregional biocentre (SRBC) 116 Šúr (including NNR Šúr) interconnected with hydrologic supraregional biocorridor (SRBK) 23 leading concurrently with watercourses Small Danube and Šúrsky channel. SRBC 115 Martinský les is located in the north-eastern part of the territory.

Regional level

North of the Bratislava – Rača municipality, south eastern slopes of Little Carpathians there is a regional biocentre RBC 7 Vajnorská dolina and the related regional biocorridor RBK XVIII Potok Strúha. It is connected with the regional biocentre RBC 28 Šprinčov Majer composed of water and wetland communities. Small biocentres of regional importance are recorded in the cadastre of Pezinok west of Grinava (a part of Pezinok), and sites Nad Jurom and Gaštanica in the cadastre of Svätý Jur. The regional biocorridors also include Fofovský and Fanglovský potok (creeks) and biocorridor Duby located between the two creeks. The ecotone biocorridor between the forests and vineyards at eastern slopes in the cadastre of Svätý Jur municipality is also recorded as a regional biocorridor. South of Rača municipality, between the border of PLA Little Carpathians towards Vajnory municipality, there is regional biocorridor RBC XVII Račiansky potok including its tributaries. It is connected to the regional biocorridor RBC Šúrsky channel, which runs along the north-western and south-western border of SRBC 116 Šúr.

Another significant biocorridor is RBC Čierna voda, bordered by highway D1 which continues up to the conflux with Small Danube.

Population

The proposed highway D4 in the section Ivanka North – Rača is situated at the edge of the Capital City SR Bratislava, its municipalities of Vajnory, Rača, Svätý Jur, Ivanka pri Dunaji. The number of people present in the city during the day increased by 40 %. It results from the fact that people travel to work, school, for tourism purposes and from the fact that Bratislava is the administrative and economic centre and the destination of the transit transport. From the viewpoint of the administrative arrangement, the Vajnory and Rača municipalities are included in District of Bratislava III, Svätý Jur is a part of District of Pezinok, Ivanka pri Dunaji belongs to District of Senec.

Certain statistical indicators:

data of the Statistical Office as at 31 December 2012:	Bratislava	BA - Rača	BA - Vajnory	Sv. Jur	Ivanka pri Dunaji
Number of inhabitants	415,589.	20,068	5,268	5,317	6,011
Population density per 1 km ²	1,130	848	389	133	422

Pre-productive age	55,607	2565	791	871	999
Productive age	247,476	11,508	3,216	3,226	3,478
Post-productive age	112,506	5,995	1,261	1,220	1,534
Total live births	5,088	235	53	77	68
Total deceased	4,050	215	43	49	60

Archaeological sites

The following archaeological site is recorded in the route of D4 Bratislava, Ivanka North – Rača:

Location 7: Ivanka pri Dunaji, Vajnory, Svätý Júr, positions Vlčí klin and Háj

Type of location: Settlement large agglomerations with production buildings

Dating: Prehistory, Roman Period, Slavic period to the Middle Ages

Findings: Housing estate and manufacturing objects from prehistory to the Middle Ages and iron furnace from the Roman period.

Findings: ceramic, small finds, animal bones, iron slag.

Construction activities often result in damage or total destruction of archaeological sites protected by Act No. 49/2002 Coll. on Heritage Protection, as amended. In order to avoid liquidation and loss of national cultural heritage sites, it is required that the sites be documented and examined in the course of rescue archaeological research.

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

Without construction of D4 highway it is difficult to image development of the respective region, which already now lacks quality infrastructure. Many of the planned urban activities could not be performed due to overload of the existing road network and big part of the evaluated territory would be preserved in the current shape. Major part of traffic would remain in the current transport network (also within village limits), with current problems.

Based on results of capacity evaluation (Feasibility and Suitability Study for Route of D4 Bratislava Jarovce - Ivanka North - Stupava South - state border SR/RR) it is obvious that to large extent the existing road network does not satisfy traffic demands currently.

From the results of evaluation of the section it arises in what time the capacity of individual sections will be fulfilled:

D2 Highway

- section Lafranconi bridge will not meet capacity demands of traffic load already in 2015
- section Lamač – Polianky will meet the capacity prospective of traffic loads until 2025,
- section of Sitina tunnel will meet the capacity prospective of traffic loads until 2050.

D1 Highway

- section Incheba - Ovsište will meet the capacity prospective of traffic loads until about 2025
- sections from Ovsište to the municipal part Vajnory are not suitable already today, whereas the limiting section is Prístavný most with total burden above 110,000 vehicle/24 h.

First class roads I/2 and I/61

- road section I/2 will meet the capacity prospective of traffic loads until 2035 and the road section I/61 will meet the capacity prospective of traffic loads till 2017,
- road sections I/61 Zlaté Piesky - Vajnory will meet the capacity prospective of traffic loads for all evaluated periods.

VI. ACCORD OF THE ACTIVITY WITH URBAN PLANNING DOCUMENTATION

Current status of the land-use planning documentation (2014)

Resolution No. 60/2013 dated 20 September 2013 approved the Land-Use Plan of Bratislava Self-Governing Region, and the Generally Binding Regulation of Bratislava Self-Governing Region No. 1/2013 dated 20 September 2013, declaring the binding part of the Land-Use Plan of Bratislava Self-Governing Region. This repealed the preceding LUP of Bratislava self-governing region, as amended in 2008. Drawing of public transport routes includes the route of highway D4 in a position

recommended by final statement of the Ministry of Environment SR 292/2011-3.4/ml dated 7 February 2012 to Assessment Report concerning structure D4 Ivanka North – Záhorská Bystrica.

Land-use plan of the Capital City of SR Bratislava

– **Changes and amendments 02** prepared by Department of Land-Use Planning and Development of the City Council of Bratislava in 2010.

The most fundamental change in the field of highways and expressways is the implementation of the current layout of the network of highways and expressways in the Slovak Republic in the Land-Use Plan of the upper tier territorial unit of Bratislava Region, as amended, and Government Resolution No. 882 date 3 December 2008 in LUP of the Capital City of SR Bratislava. It concerns a zero radial road in the section from the border with Austria (Kittsee) to the border with Austria (Marchegg) with parameters of a highway entitled D4 and the inclusion of R7 Lučenec - Bratislava up to highway D4 in the network of expressways of the Slovak Republic.

Highway D4 (zero radial road running from the highway interchange D2/D4 in Jarovce municipality, through a new bridge over the Danube, along the southern and eastern boundaries of the city up to highway D1 and continuing on the Račianska radial road, including flyover interchanges with r. I/2, extended Bajkalská, r. I/63, r. II/572, r. I/61, D1, r. III/0611, r. II/502)

Proposal of the road network for 2030 - extension of the route of highway D4 (zero radial road running from Račianska radial road, through the tunnel in the Carpathians up to the state border with Austria (Marchegg).

- **Changes and amendments.3 – Proposal 07/2013 (City Council of the Capital city)** - it concerns the first phase of changes to the valid land-use plan of the Capital City SR Bratislava, which includes the draft changes to the LUP in the site of Kráľova hora and changes to the main public transport system - tram route Jantárova cesta – Štúrova ulica. The changes do not relate to the position of highway D4.

Svätý Jur

In 2012 Changes and amendments No.1/2012 – Chlebnice were prepared, (Ing.arch. Milan Zelina) documentation does not deal with the position of D4 highway.

Ivanka pri Dunaji

Proposal - Changes and amendments No.1/2013 (Ing.arch. Ing.arch. Monika Dudášová) changing and amending LUP CA Ivanka pri Dunaji as amended by ZaD, approved by resolution of CA in Ivanka pri Dunaji No. 3/1998, author: Ing. Arch. Hana Hlubocká et al.

- no changes in the land-use plan with regard to the position of highway D4

- deals with adding new collecting road FT B3 (3rd class road), running in the south-east edge of the cadastral territory of the municipality. Road dealt with in three stages, presumes interconnection of roads III/061066 and III/061004, as well as future connection to highway D4;

- in August 2013 District Environmental Office in Senec issued the Decision based on the fact finding concerning the strategy document

Vajnory

Urban study of Nemecká dolina valley in urban part Bratislava Vajnory (AZ ateliér s.r.o. Bratislava, 12/2010), proposed structure does not collide with the intended investments in the territory.

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 is the National Reserve Šúr and PLA Little Carpathians, the proposed change, however, does not directly interferes with these territories.

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

Impacts on air pollution

Air pollution due to car traffic has a negative impact on the overall condition of the environment. During the road operation a part of air pollution from transport shall be shifted from the current road network, which leads through the urban area to the area which has not been attacked by direct adverse impact of transport. This means distribution of pollution to bigger territory.

In addition to harmful substances in the exhaust gases and road vehicles the air pollution involves also the increased dust caused by turbulence of particles on the road surface and in its immediate vicinity. Such effects will be felt mainly during the construction.

Noise

Diversion of substantial part of traffic from current road network to D4 highway will have a positive impact on reduction of emissions and noise from traffic in the territory, where permitted noise limits are already now exceeded. At the same time noise production shall be shifted to location, where this phenomenon has not occurred so far. To protect avifauna (noise protection, protection in case of flight over the highway) barriers shall be constructed.

Based on results of noise study in DÚR noise measures were proposed to protect citizens of the National Reserve Šúr:

- 261 Noise barrier at 0.450 - 1.355 km of D4 on the right
- 262 Noise barrier at 0.400 - 1.650 km of D4 on the left
- 263 Noise barrier at 2.000 - 3.950 km of D4 on the right
- 264 Noise barrier at 2.000 - 2.950 km of D4 on the left
- 265 Noise barrier at "VA-ST" branch on the right at interchange "Čierna voda"
- 266 Noise barrier at "ST-VA" branch on the right at interchange "Čierna voda"
- 267 Noise barrier at "VA-CV1" branch on the left at interchange "Čierna voda"
- 268 Noise barrier at "VA-CV1" branch on the right at interchange "Čierna voda"
- 269 Noise barrier at "CV-VA" branch on the left at interchange "Čierna voda"
- 270 Noise barrier at "VA-CV2" branch on the right at interchange "Čierna voda"
- 281 Façade adjustments in Vajnory at 1.200 - 1.600 km of D4 on the left

Impacts on nature and landscape

Impacts on habitats shall be more significantly obvious during highway construction in places of crossing of water streams, where remains of original riparian overgrowth occurs.

Impacts are visible by the following:

- direct disposal of habitats,
- interference with and influencing the habitat functions
- creating or strengthening barriers in migration corridor,
- impact of noise, emissions and spreading on habitats near the highway.

The project documentation of LUPD includes annexes Stocktaking and Social Evaluation of Woods, and Stocktaking and Social Evaluation of Habitats of Community and National Importance (both prepared by Zvědelík 2013).

Research of habitats on the route of D4 highway Ivanka North - Rača and on the route of all objects relating to the highway was performed in October 2013. Habitats on access roads and other objects, including interference in water streams, are mentioned in the closest highway stationing. Within the research the habitat of European importance was identified only in one location. It is a habitat **Ls1.1 Willow-poplar lowland riparian forests – priority habitat of European importance**, which occurs ca in km 2.4 – 2.6 D4 on the planned access road.

Under Act No. 117/2010 Coll. amending and supplementing Act No. 543/2002 Coll. on Protection of Nature and Landscape, as amended by Act No. 24/2006 Coll. on Environmental Impact Assessment amending other acts, as amended, Section 6, par. 2 if the Nature and Landscape Protection Authority in its statement under Section 9, par. 1 notices that if the works, for which the statement is issued, can damage or destroy the habitat of the Community importance or habitat of the national importance, such works require consent of the Nature Protection Authority.

According to Stocktaking and social evaluation of woods growing outside forests in the route of the proposed D4 highway, there are woods at 39 sites in the cadastres of municipalities Ivanka pri Dunaji, Svätý Jur and Vajnory.

During stocktaking it was identified that trees grow as an accompanying vegetation of roads, watercourses, drainage ditches, trees along the dike of Šúrsky kanál (channel), sparse landscaping greenery in agricultural land, as well as vineyards. During stocktaking a total of 883 pieces of trees and 47,690 m² of bush vegetation were recorded. Out of this number the consent of the Nature and Landscape Protection Authority is required for 355 pc of trees and 47,690 m² of bush vegetation, whose social value amounts to EUR 608,161.26.

Impacts on surface water and groundwater

Construction and operation of the highway may affect the quality of surface water and groundwater and their regime. In terms of quality, the water contamination by oil products is most likely due to disorders and accidents of mechanisms.

Based on the results of evaluations stated in hydrogeological expert opinion, as well as hydro-technical calculations, rainwater can be drained from the highway surface drainage based on the designed proposal.

Water from the road shall be drained into the road ditch. Terrain from the section beginning until 4.1 km is flat, water in the ditch will be stagnant. Ditches shall serve as evaporating - imbibitional recipients. Width of the ditches is designed based on the highway width in the width of 2 to 3 m to capture amount of rainwater that occurs once in 2 years.

Water from roads with a gradient to the central separating lane will be captured in the drain and via inlets and pipes led to the slope and ditch next to the highway.

Moor drainage in embankment is solved by its cross gradient leading to the slope of the road structure. As permeable material (gravel) is anticipated to be used in embankments, no drainage has been designed in SDP.

Moor drainage in notches is solved by cross gradient to ditches or to longitudinal drainage flowing to the inlets or directly to the shafts of road sewage.

Along the highway ditches have been designed intended as evaporating or imbibitional ditches.

Before, during construction and operation of D4 highway monitoring of surface water, waste water and groundwater based on individual monitoring project shall take place, which is a part of the project documentation.

Impacts on soil

Due to highway construction agricultural land, forest land and permanent grassland shall be taken, organisation of soil shall be disturbed (division of stretches of land, disconnection of existing field roads, etc.), soil erosion and contamination may be impacted, as well as agricultural cultures along the highway.

Agricultural land protection during construction must be ensured mainly by minimizing use for handling belts, construction yards and temporary material stock piles. Prevention of soil contamination by oil from construction mechanisms can only be ensured by consistent maintenance of construction equipment in order to prevent leakage to the ground. Construction yards must be situated on paved surfaces. Basic measure to protect agricultural lands is to carry out removal of humus overburden of agricultural land in terms of the methodological guideline of the Ministry of Agriculture no. 2341/2006-910.

VIII. COMPENSATORY MEASURES

Compensatory measures on construction of D4 highway Ivanka North - Rača represent a substitute for incurred loss, in particular the material, economic and material one.

in social and economic sector

A close cooperation of the investor, structure supplier and the concerned villages is supposed to take place during the construction of D1 highway 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.)

Property damage of affected population is a critical issue. It requires only adequate offsetting of losses complying with the requirements of the population concerned to mitigate this impact in accordance with applicable laws (Decree of the Ministry of Justice No. 492/2004 Coll. on assessing the common value of assets, as amended), individually in close cooperation with investor of the construction, concerned inhabitants and municipal council.

for agricultural land use

Compensation measures referring to soils result from respective legislative regulations.

for cutting of wood species growing outside forests

The compensatory measures regarding wood species cutting 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 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.

for damage or destruction of habitats

In accordance with the legislation if the nature and landscape protection authority notes that by activity the habitat of European or national importance might be damaged or destroyed, for its execution approval of the nature protection authority shall be required.

IX. COMPARISON OF DESIGN ALTERNATIVES

Differences between the alternative recommended by final opinion of the Ministry of Environment of the Slovak Republic and designed solution resulted from the change of spatial position of the highway route and changes in some objects of the construction. Compared to EIA following changes occurred in LUPD:

- changes in location of highway D4,
- changes in location and shape of interchanges,
- changes in positions and scope relocations and reconstruction of roads and created structures of relocations and reconstruction of roads that have not been addressed in the Assessment Report ,
- changes in bridge structures, resulting from changes in position of D1,
- modifications and relocation of watercourses that were not assessed in the Assessment Report,
- changes in the relocations of utilities, which resulted from a detailed geodetic survey, comments of network administrators and from coordination with other structures,
- changes in the scope and location of noise barriers,

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. Changes mentioned in the position of the highway resulted in changes of detailed solution of other bridge objects, relocations and reconstruction of roads, relocations and reconstruction of water streams, relocations of utilities and in the range of noise control measures.

The route of projected highway is run in the corridor of an option, which was recommended by the Final opinion of the Ministry of Environment of the Slovak Republic of 7 February 2012. Thus, the change in the proposed activity does not represent a principle change of the design.

The most important changes are as follows:

- Positioning of highway D4 in bigger distance from the Lake of Lysec in accordance with recommendations of the Final Opinion of the Ministry of Environment of the Slovak Republic (EIA),
- Change in the height of the route of highway D4 at FOI "Ivanka – North" under the conclusions from the elaborated analysis (D1/D4) and Technical Study "Highway D4 Bratislava, 15.0 km point, interchange Ivanka North – Rača Interchange" prepared on the basis of requirements and recommendations of the Final Opinion of the Ministry of Environment SR (EIA), running under

the level of highway D1, by bridge over Vajnorský potok (creek), in the vicinity of the existing built-up area of Vajnory on the low embankment over the level of the current terrain, bridge over Račiansky potok (creek), at 3.300 km of D4 on the low embankment over the level of the current terrain, continued by bridge over the railway Bratislava – Žilina and over road II/502,

- Change in the location and shape of FOI "Čierna voda" due to existing outlook traffic data, the option of future connection of the new urban area in Vajnory directly to FOI "Čierna voda", avoiding the burdening of built-up area in the old Vajnory by traffic noise by new urbanisation, in the Vajnory area, collision free cycling route with regard to road No. III/5021.
- Change in the shape of FOI "Rača" in accordance with recommendations in the Evaluation Report (EIA), which shall be directly reflected in lower construction costs, smaller range of bridge objects and achievement of bigger distance from the Šúr National Nature Reserve.

Changes in proposed activity can be viewed positively, as it will improve traffic conditions in the area and significantly increase traffic and population safety. The positive aspects of the proposed activity will be felt mostly by inhabitants of rural and urban areas through which the whole transit traffic passes.

The negative impact of the operation on inhabitants is indirect by means of air pollution and noise from cars. Observance of noise load limit values shall be insured by construction of noise barriers. Management of waste from the operation of the highway will be ensured by the highway administrator in cooperation with operators of waste recovery and disposal facilities on a contract basis.

The structure will be built under the construction permit. It will reflect all the conditions of implementation so as to meet all applicable legislative conditions aimed to elimination of negative impacts on the population.

In Bratislava, March 2014

Handled 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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