

NON-TECHNICAL SUMMARY

I. PURPOSE OF THE PROJECT

At present, the traffic in the section of Dunajská Lužná - Holice is run along the existing road I/63 which no longer meets current traffic loads for its condition and technical parameters and degrades the environment and threatens the safety of residents in the surrounding villages by emissions and noise.

The purpose of the planned construction is building a capacity, divided four-lane directional communication, in the optimal route in terms of traffic flow and safety. The transit traffic is excluded from the territory of neighbouring municipalities by construction and operation of expressway and thereby the impact of transport on the population and the environment is improved.

II. BRIEF DESCRIPTION OF THE TECHNICAL DESIGN

The section of R7 expressway begins between the village of Dunajská Lužná and the town of Šamorín, where construction is linked on the section included within DZP (Documentation for zoning permit) "R7 expressway, Bratislava - Dunajská Lužná" right after the Dunajská Lužná interchange. R7 is run along the left side of the road I/63 (to the north) in its entire length mostly on agricultural lands. From the connection to the previous section the route starts to deviate from the road I/63 to the north so as to bypass Šamorín on the north. At about 0.800 km the route crosses a regional bio-corridor Danube - Little Danube by an overpass, paving the way for its elevated junction below R7. Furthermore, the route gets into the space between the town of Šamorín and the village of Kvetoslavov (closer to Kvetoslavov). At this point it crosses the road II/503, to which it is connected via elevated junction of Šamorín. It continues north around the village of Šamot, to the south around the village of Čukárska Paka. At about 9.000 km, near the site called Tarnoki, an ecoduct over R7 is designed to ensure the migration of game animals through R7. At this point, the route crosses the border of the II. degree protection zone of natural healing waters in Čilistov (the route is in 0.000 to 0.900 km of the PZ). Then the route passes between the village of Trnávka and Macov with sports and recreation centre (shooting range) on the right side of R7, which is not affected by the structure (found only in the protection zone of R7). Finally, the route is run north of the village of Blatná na Ostrove and once again it comes close to the road I/63. The route of this section of R7 ends between the villages of Holice and Čechová in Holice elevated junction with connection to the road III/06324 and the road I/63. The end of the section of R7 is at 17,380 km, where it joins to the line "R7 Holice - Dunajská Streda".

The decisive part of the structure is a body of R7, two interchanges (EI Šamorín, EI Holice), 12 bridges on R7 (2 pieces on R7 and 10 pieces over R7), the total length of bridges 522.5 m (two-sided large Blatná na Ostrove parking area, Expressway management and maintenance centre (EMMC Holice), 10 noise barriers, 14 relocations of field roads and 15 access roads to the lands. Furthermore, part of the construction consist of necessary relocations or modifications of concerned overground and underground utilities. R7 expressway will be available with the information system and drainage systems. The entire length of the expressway is fenced.

Basic information

- Category:

- R 31.5/120 at 0.000 - 0.360 km, a four-lane road with broader middle dividing strip in order to allow the perspective extension to a six-lane road towards the axis of the expressway,
- 0.360 to 0.585 km change from category R 31.5/120 for category R24,5^C/120
- R 24.5^C/120 at 0.585 to 17.380 km, four-lane expressway

- total length: 17.380 km

The section of R7 expressway is part of the express route defined by the Government Resolution no. 523 of June 2003 and is part of the basic network of motorways and expressways in the corridor of Bratislava - Dunajská Streda - Nové Zámky - Veľký Krtíš - Lučenec. After the construction of the R7 expressway in the section Bratislava - Dunajská Streda this one will be also part of E575, the international European route, in the direction of Bratislava - Dunajská Streda - Medveďov - Vámoszabadi - Győr and the main link between the capital city of Bratislava with the southern centres of Trnava and Nitra region.

The construction of R7 expressway is in line with the development strategy of Slovakia. Compliance with international treaties and other documents that are binding for Slovakia is provided by the Ministry of Transport, Construction and Regional Development (hereinafter MTCRD SR) and in accordance with the Slovak Spatial Development Perspective (KURS) and the Concept of development of road and motorway network of the SR.

III. CHARACTERISTICS OF THE AREA AFFECTED

The route of R7 expressway in the section of Dunajská Lužná - Holice is located in Bratislava and Trnava regions, in the district of Senec and Dunajská Streda.

The structure is located in the Danube plain, the whole of Danubian Plain. Start of the proposed route of the expressway begins at Dunajská Lužná interchange and continues to agricultural lands outside the local municipalities and ends at the village of Holice. The total length of this section of R7 expressway is 17.318 km.

The territory has a very slightly undulating flatland relief of mild depressions and low elevated aggradation banks and sand dunes. Danubian Plain presents new structural alluvial plain that develops even today as a result of tectonic instability. The area is formed by mostly agricultural land, furthermore, there are groves, windbreaks and accompanying green of field roads. The area has been changed under the influence of settlement and agricultural mass production and the original ecosystems are preserved only along water courses. The vicinity of the route is dominated by agriculture and the image of intensive farmland. Localities with a high biodiversity are water flows habitats, vegetation along rivers.

IV. MAIN CHARACTERISTICS OF ENVIRONMENT

Geomorphology

In terms of geomorphological division of Slovakia (Mazúr, Lukniš, 1980) the area belongs to the Western Pannonian Basin province, the Little Danubian Plain subprovince, the Danubian Lowland area, the Danubian Plain whole. The territory has a very slightly undulating flatland relief of mild depressions and low elevated aggradation banks and sand dunes. Danubian Plain presents new structural alluvial plain that develops even today as a result of tectonic instability. Ground surface de-levelling is insignificant, elevations are flat. The overall slope of the area until the border of Váh river is from the NW to SE. Geo-morphological differentiation of the territory is the result of two antagonistic operating processes: uneven tectonic decline and uneven sedimentation of river alluvium onto the subsiding area (Lukniš - Mazúr, 1959). The creation of raised relief forms was accompanied mainly by aeolian activity.

In the section from Dunajská Lužná to Holice the subsoil is formed only with quaternary sediments - mostly fluvial with terraced development that are locally covered with aeolian sediments represented by loess, loess clay, drifted sand or redeposited loess clay.

Engineering and Geology

Engineering and Geology of the subsoil of the route of R7 in the section Dunajská Lužná - Holice can be characterized as follows:

The route passes over a flat slightly undulating area with mild depressions and short elevations in the height of 1-2 m. The vertical alignment is conducted in the embankment of 0.5 to 2.0 m high, in depressions of 2 to 2.50 m high. Humic layer thickness is about 0.50 m, which will be removed from the subsoil. We can find alluvial floodplain sediments below - loams, clays, clayey and loamy sands, which are irregularly alternating or different lithological types can be wedged at a short distance. The thickness of these sediments varies from 1 to 4 m. A thick layer of gravel is found below the alluvial clay and sand. Gravel is mainly medium-grained, with variable amounts of a sand fraction (0-50%), mainly medium-deposited, sometimes with loose positions. Groundwater level is expected at a depth of 1-3 m, with a higher levels status in surface flows can be increased by about 1 m.

Soils in low embankments subsoil and in ground level are highly dangerous and frosty, the water regime is considered capillary. According to STN 72 1002, soil can be classified in terms of subsoil suitability of the road plain to group VII. - IX. They provide less useful to unsuitable subsoil. It is necessary to consider the exchange of soil in the core with a thickness of about 0.50 m and replacing with gravel sands using geosynthetics.

In the section of 6.00 to 17.380 km the route crosses over flat slightly undulating area with mild depressions and sometimes with mild elevations of up to 1 m. The vertical alignment is conducted mostly in the embankment of 0.5 to 1.5 m high, in depressions of 2 to 4 m high. Embankment subsoil or road plain subsoil is formed by alluvial sediments represented by loams, clays, clayey sands and loamy sands which are changing in irregular vertical and lateral turns. The thickness of alluvial sediments is 2-4 m. River gravel soils are found below. Local occurrence of dead river branches that are filled with muddy sediments and organic sediments with a thickness of 1-3 m, sometimes to 4 m. It is expected to modify or replace the subsoil in the route with a thickness of 0.50 m using geosynthetics.

Within the assessed area, only seismic movements and erosion may be applied as geodynamic phenomena in the territory. Seismicity in the affected area reaches 7° MCS. The site is part of the source region with seismic risk no. 4, outside epicentral area.

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 is 530 to 650 mm, with maximum precipitation in the summer (34.5%), particularly in July, with the biggest influence of local storms. 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). Soil moisture deficit is even exacerbated by strong and frequent winds. In terms of the precipitation amount the territory can be characterized as moderately dry area.

Duration of winters is usually 40 days, frequently winters without snow. The first frosts start in October. The number of summer days is around 100. The sum of temperatures of 10°C or more is in the range of 3,000 to 3,200, where the temperature is maximum in August and minimum in December. The average annual air temperature is between 9 to 10°C. The warmest month is July with an average temperature of 19.8°C, the coldest month is January with an average temperature of -1.7°C. The soil freezes to a depth of 50 to 70 cm. The area is characterized by a considerable incidence of inversions.

There is the prevailing west to north-west wind the Danube Lowland. The states of calm are rare. The winds are strongest in March and weakest in December. Clear predominance of wind direction of NW - SE with an average speed of 3 m/s. Average monthly maximum is 5.9 m/s. The territory has a relatively suitable ventilation, only for the weak north-west flow, polluted air from Bratislava tends to penetrate in the area.

Surface water

Žitný ostrov is bordered by the Danube and the Little Danube. The Danube creates a wide system of river branches in the section from Vlčie hrdlo until Gabčíkovo, below is less

meanders and river branches. Natural character of the river is altered with barrages and offsetting parts of the flow. Thereby the natural hydrological conditions have changed - branches and meanders of the Danube are partially separated from the mainstream by water dams. The branch system operates mainly between dams and surface flows. The most important Danube branches are Biskupické, Kalinkovské, Hamuliakovské branch system, branch system in the section of Dobrohošť - Hamuliakovo near Topoľovec and Palkovičovo. The current hydrographic and hydrologic conditions are the result of putting the Gabčíkovo Water Dam in operation.

The upper part of Rye Island is without natural river network and in the lower part includes Klátovské branch of Little Danube with his right-hand system of tributaries from the area of Šarréty. In addition to the natural network there are artificial watercourses and drainage and irrigation canals in Rye Island.

Changing the flow in the Danube, the reservoir and the branches will change sedimentation and erosion conditions and these will change parameters of infiltration (colmatage grade) and consequently the redox conditions in the watered area. In terms of controlling the groundwater levels, the channel system affects the the groundwater level. Groundwater extraction by wells reduces water outflow through drainage canals.

Hydrological and hydrographic parameters are used directly for modelling groundwater flow as boundary conditions usually of 3rd grade. Drainage conditions and water levels of surface flows are a function of several factors such as climatic conditions, geological structure as well as the morphology of the territory. A significant flow of Danube in terms of water management is in rain-snow runoff regime with maximum flow in the months of April, May, June, July, August and minimum flow in October, November, December, January

There are no watercourses directly in the affected area.

Water areas

Water areas in the relevant and adjacent territory are the result of human activity as a result of sand and gravel mining. Water areas of greater surface and depth scope were formed after the extraction of raw materials - sand and gravel for the construction of the Gabčíkovo Water Dam, e.g. Nové Košariská to the north-west from the area of interest. The largest water area is Hrušov on the Danube reservoir. In the vicinity of the proposed R7 expressway only smaller water areas are found.

Groundwater

Hydrogeological conditions of the area are conditioned by its geological and tectonic structure. From the point of view of water management the most important sediments are from upper Pliocene and Quaternary, which create a hydrogeological unit, an extensive groundwater reservoir with free surface and uniform regime.

A huge complex of quaternary sandy gravels of variable thickness (from 10.0 m in Bratislava to 340.0 meters at Gabčíkovo, and more) is the main groundwater collector. By origin it is divided into a part formed in lacustrine-riverine environment and another part formed by fluvial activity of Danube after its inception in the mid-Mindeli.

The Danube lacustrine-riverine sediments are lying at the heart of depression behind the village of Veľký Meder on Gabčíkovo sands, but their distribution is wider. At present, the lacustrine-riverine sediments form the basis of the Danube fluvial sediments, from depths of about 95.0 to 160.0 m. Their total thickness is likely to exceed 200.0 m (Repka et al., 1978). They are represented by small gravel and sand with clayey positions.

River sediments in the area of maximum depression are ranging up to 160.0 m or more. Their thickness gradually decreases towards the edge. They are represented mostly by gravel, gravel with sand, sand and sand with gravel. There are also some positions of aluminosilicate clays. Towards the Little Danube, especially in the lower parts, these positions are increasing to the point that form a continuous and quite thick insulating layer.

Gravelly and sandy Pliocene positions are found in the Quaternary subsoil. The groundwater accumulated in them has an increased temperature (16-18°C). The deeper subsoil Neogene

shows thermal highly mineralized groundwater (depth of 1,200-2,500 m). The waters around Veľký Meder and Zlatná protrude in faults into the quaternary, increasing the content of Cl and SO₄ in groundwater.

Quaternary sediments permeability is different. It is caused by changing the granularity - gradual material refinement along the Danube flow and towards the Little Danube. The groundwater regime is affected by the Danube, the Little Danube, branch system, precipitation, evaporation and artificial influences (drainage and irrigation canals, groundwater off-take, etc.). Danube between Bratislava and Dobrohošť flows high above the water table, thus consistently complements groundwater. At present, the old Danube riverbed drains groundwater from Dobrohošť (below the weir at Dunakiliti).

Another power source is the area under the Small Carpathians - Black Water (Repka, 1978). It is suggested by the significant SE direction of groundwater flow in Bratislava - Jelka section and less significant one to Trstice. There are not sufficient evidence for a quantitative assessment of the resource, however, qualitative influence on relatively large part of the Rye Island has been demonstrated (groundwater pollution by sulphates, extended in the continuous strip, roughly north from Rovinka - Macov - Dunajská Streda line). The pollution has long been widespread particularly in the Bratislava - Hrubý Šúr section and is present not only on the surface but also through the entire profile of the quaternary watered gravels. The line source of groundwater pollution is the Little Danube.

The depth of the water table below the surface at the top of Rye Island is about 4.5 to 7.0 m, in the middle part towards Dunajská Streda around 1.0 to 3.0 m.. The maximum water table is time-bound to the predominant impact factor. The groundwater regime is virtually identical to the Danube regime in the riverside zone.

Protected areas in terms of water management

Protected water management area of Rye Island

In 1978 the area was declared a protected water management area of natural water accumulation (PWA) of Rye Island by NV SSR no. 46/1978 Coll. as amended. It is also part of a sensitive and vulnerable water area under Government Ordinance no. 617/2004 Coll. establishing sensitive and vulnerable areas. All activities in this area are limited by the regulation and managed by state authorities in order to protect this unique groundwater accumulation. Act of the Ministry of Environment No. 364/2004 Coll. on water and amending Act of the Slovak National Council No. 372/1990 Coll. on offences as amended (Water Act), Section 33, par. 1) provides that sensitive areas are surface water bodies, where there is or may be due to increased concentrations of nutrients the undesirable state of water quality. Vulnerable areas are agricultural land used in cadastral areas of municipalities, which are listed in Annex 1 of Government Ordinance. In this sense, a vulnerable area can be called almost the entire region of south-western Slovakia.

It is necessary to create favourable conditions for the formation and conservation of ground and surface water sources in PWA and to ensure comprehensive water protection.

Thermal and mineral waters

Neogene sediments in the Danube Basin (depth of 1,200-2,500 m) are bound by highly mineralized thermal waters. They are primarily Pannonian, Dacian and Pontic sandstone in the Rye Island. There have been excavated several geothermal wells, which are used for different purposes (health sector, energy, agriculture, recreation, etc.) in the wider area.

The route of R7 Dunajská Lužná - Holice is passing through a protection zone of II. degree of natural healing waters in Čilistov. Protection zones of natural healing resources in Čilistov (FGČ-1 well) were declared by Ministry Decree No. 552/2005 Coll. of 25 November 2005. FGČ-1 well in Čilistov was declared a natural healing source by Ministry Decree No. 89/2000 Coll. declaring natural healing resources and natural resources of mineral table water.

Soil

Soil conditions of the Danube Lowland are determined by changing climatic conditions, long-term changes in groundwater levels, precipitation, grain composition of the soil and sediments in the aeration zone. Composition of sediments from the surface to the groundwater level modifies the local water and moisture regime at the same depth of water table. Soil in the area is subject to transporting pebbles, sand and suspended matter. They are light soils, mostly sandy with mixture of gravel, towards the SE aluminium sand to aluminium, formed on alluvial river sediments.

There are mostly *carbonate fluvisols* on Holocene alluvial sediments in the wider area of the Danube Lowland. The soil profiles usually have geological layering, with common clay on the top, with gravel layer below, then sand and gravel again. The properties of these soils depend on the granular and chemical composition of the sediments, the groundwater and flood water regime.

Fluvisols pass into *carbonate micellar muck soils* near the area, formed on the old river clay and sludge flood sediments with superficial gravel surface and water table in the gravel. They contain precipitated calcium carbonate (from Podunajské Biskupice towards Šamorín and Dunajská Streda) in the humic horizon. This muck soil is more infused toward the more humid area and passes towards brown-earth soil type.

The alluvial deposits with high levels of groundwater, periodically flooded and waterlogged loess formed *mollisols* with muck-soil-like quality (near the Danube). Mollisol was formed on alluvial floodplain with carbonate components and the influence of mineralized (calcium of bicarbonate) groundwater with elevated level. The main soil-forming process was represented by a considerable and deep accumulation of a high quality humus substances under an increased wetness of the soil from mineral-rich ground water (350 - 1,000 mg/L).

R7 expressway route passes through several valued soil-ecological units (BPEJ): 0017002, 0017005, 0018003, 0019002, 0020002, 0020003, 0032062, 0032065, 0035001, 0036002, 0036032

The main soil units (MSU)

MSU Code	Characteristics	
17	ČMČ ^c	Muck mollisol, mainly carbonate, moderate
18	ČMČ ^c	Muck mollisol, mainly carbonate, heavy
19	ČAm ^c	Mollisol typical, mostly carbonate, moderate to light, with a favourable water regime
20	ČAm ^c	Mollisol typical, mainly carbonate, heavy
32	ČM	Muck soil shallow on alluvial sediments, moderate, mostly carbonate
35	ČMm ^c	Typical muck soil carbonate, on carbonate alluvial sediments, light, drying out
36	ČMm ^c	Typical muck soil carbonate, on carbonate alluvial sediments, moderate

In some districts more than a half of total agricultural land is represented by protected land (agricultural land classified by code of valued soil-ecological units in the 1st to 4th quality group). The main reason for such a high soil evaluation is favourable geographical position within Slovakia, specific climatic and habitat lowland conditions, favourable hydrological regime and subsoil for the development of the highest quality soils.

According to Annex no. 3 to Act No. 220/2004 the agricultural land is classified under BPEJ code into 9 quality groups. The following groups occur in the area:

0017002 – Group 1	0017005 – Group 1
0019002 – Group 1	0018003 – Group 2
0020002 – Group 2	0020005 – Group 2
0036002 – Group 2	0036005 – Group 2
0036032 – Group 3	0036042 – Group 3

0032065 – Group 6
0032062 – Group 6

0035001 – Group 6

The quality of agricultural land is affected by various negative impacts, especially from agricultural activities. The most significant is the threat by soil erosion (water and wind), soil contamination and salinisation. A significant part of the agricultural land (30- 50%) is threatened or potentially threatened by *wind and water erosion*.

Flora

According to the phytogeographical division of Slovakia (Futák 1984) the flora of the assessed territory belongs to *Pannonicum*, Pannonian xerothermic flora circuit (*Eupannonicum*), the district of Danube Plain.

According to the vegetation map of reclaimed natural vegetation (Michalko et al. 1984) there were willow-poplar floodplains in the wider area of the evaluated area, in alluvial silt of the Danube Lowland, particularly in alluvial depressions of the Danube, phytocenological affiliation to the *Salicion albae* Soó 1930 union. This vegetation is represented by phytocoenoses of standard willow-poplar forests, shrub willows and all their developmental stages. The trees are represented almost by all kinds of soft floodplain species in particular: crack willow (*Salix fragilis*), white willow (*Salix alba*), white poplar (*Populus alba*), black poplar (*Populus nigra*), grey poplar (*Populus canescens*), bushy floor is poor in species and a stage of its development depends on the mode of surface flooding. Other trees European white elm (*Ulmus laevis*), bloody twig dogwood (*Swida sanguinea*), elderberry (*Sambucus nigra*). Currently, the existing border fragments are characterized by vegetation with high coverage of allochthonous expansive and invasive species.

Close follow-up of areal dominant lowland floodplains on relatively drier stations, currently known as oak-elm-ash lowland wetlands with phytocenologic affiliation to *Alnion incanae* union Pawlowski in Pawlowski et al. 1928, sub-union of *Ulmenion* Oberd. 1953. As to species, the predominance of hard floodplain woods: narrow-leaved ash (*Fraxinus angustifolia*), oak (*Quercus robur*), field elm (*Ulmus minor*), ash (*Fraxinus excelsior*), field maple (*Acer campestre*), bird cherry (*Padus avium*), which are usually mixed with some soft floodplain forests, for example, white poplar (*Populus alba*), black poplar (*Populus nigra*), alder (*Alnus glutinosa*). Shrub floor is largely well developed and characterized by higher coverage. Common species are dogwood (*Cornus sanguinea*), wild privet (*Ligustrum vulgare*), European spindle (*Euonymus europaea*), field maple (*Acer campestre*), different types of hawthorn (*Crataegus sp.*), hazel (*Corylus avellana*), Tatarian maple (*Acer tataricum*) and others. Currently these areas are intensively used for agricultural purposes, formed in fragmentary, more or less border communities or habitats in rural areas and agrocoenoses.

Real vegetation in the area concerned

Real vegetation, except field crops and dynamic facia of field weed - segetal communities, is represented only by ruderal habitats: X7 Intensively cultivated fields, X5 Waste lands and extensively cultivated fields particularly rubble habitats designated as X3 Nitrophilous ruderal vegetation outside settlements, X4 Thermophilous ruderal vegetation outside settlements, X8 Invasive neophytes vegetation, X9 Non-native species cover, Kr7 Blackthorn and hazel scrub.

Characteristics of habitats and their relevance

An analysis of the current state of flora, vegetation and biota of the area shows that the area is free from any preserved original natural habitat. In accordance with Act No. 543/2002 Coll. and implementing Decree of Ministry of Environment No. 24/2003 Coll., Annex 1 and implementing Decree of Ministry of Environment No. 579/2008 Coll., Annex 1 there is no habitat of European or national importance directly in this location.

Fauna

Based on the division of the territory of Slovakia into livestock regions (Čepelák, 1980) the territory is situated in Pannonia, Southern Slovak circuit, Danube district, floodplain sub-district.

Due to the nature of the area that is mostly intensively used for agricultural purposes, we can find here in particular habitats of the cultural landscape (fields, gardens, vineyards, scattered greenery, etc.), water habitats such as lower river flows with remnants of the branch system, a man-made channels network, but also wetlands, preserved near some watercourses.

The important role of water fauna. Communities of lowland rivers with slowly flowing water, muddy bottom and rich streamside overgrown cover (flies, stoneflies, beetles and dipterous insects larvae, crustaceans, worms and molluscs) are characteristic. Fish that occur in these communities are e.g. pike (*Esox lucius*), chub (*Leuciscus cephalus*), orfe (*L. idus*), bream (*Abramis sp.*), carp (*Cyprinus carpio*). The amphibians are represented by the newt (*Triturus vulgaris*), great crested newt (*Triturus cristatus*), green toad (*Bufo viridis*), edible frog (*Rana esculenta*), reptails are ringsnake (*Natrix Natrix*) and dice snake (*Natrix tessellata*). The rich occurrence of waterfowl and songbirds such as the coot (*Fulica atra*), mallard (*Anas platyrhynchos*), moorhen (*Gallinula chloropus*), great crested grebe (*Podiceps cristatus*), more species of warblers and others. The mammals occur in these communities such as the water shrew (*Neomys fodiens*), Miller's water shrew (*Neomys anomalus*), muskrat (*Ondatra zibethicus*), harvest mouse (*Micromys minutus*), river otter (*Lutra lutra*).

Communities of floodplain forests are related to the vegetation along waterways (the Danube). The molluscs are characteristic for the area such as the amber snail (*Succinea putris*), edible snail (*Helix pomatia*), mites such as the meadow tick (*Dermacentor pictus*), castor bean tick (*Ixodes ricinus*), various kinds of insects, thrips and beetles. The amphibians are represented by: newt (*Triturus vulgaris*), great crested newt (*Triturus cristatus*), fire-bellied toad (*Bombina bombina*), common toad (*Bufo bufo*), common spadefoot (*Pelobates fuscus*), European tree frog (*Hyla arborea*), marsch frog (*Rana ridibunda*), edible frog (*Rana esculenta*), pool frog (*Rana lessonae*), moor frog (*Rana arvalis*), etc., the reptails are e.g. the slow-worm (*Anguis fragilis*), sand lizard (*Lacerta agilis*), ringsnake (*Natrix Natrix*), dice snake (*Natrix tessellata*). Bird-fauna is very rich, very good conditions for life, presence of many protected and endangered species. The mammals are the southern white-breasted hedgehog (*Erinaceus concolor*), European hare (*Lepus europaeus*), hazel dormouse (*Muscardinus avellanarius*), red fox (*Vulpes vulpes*), stoat (*Mustela erminea*), wild boar (*Sus scrofa*), roe deer and others.

The most characteristic habitat of the studied area is steppe. Steppe is richly populated by numerous species of invertebrates (insects such as Hymenoptera, Diptera, Orthoptera, Neuroptera, beetles, etc.). The remarkable representatives of Entomofauna are the European mantis (*Mantis religiosa*), myrmeleon (*Myrmeleon formicarius*), rhinoceros beetle (*Oryctes nasicornis*), great capricorn beetle (*Cerambyx cerdo*), vineyard cicada (*Tibicen haematodes*) and others. The amphibians in this habitat are the green toad (*Bufo viridis*), reptiles such as green lizard (*Lacerta viridis*, a critically endangered species), and sand lizard (*Lacerta agilis*). Birds belong to the largest group, due to their high mobility. The species inhabiting this environment are partially adapted to anthropogenic changed environment, but most nesting birds are concentrated in the woody and aquatic habitats. They occur as follows: white stork (*Ciconia ciconia*), Montagu's harrier (*Circus pigargus*), sparrowhawk (*Accipiter nisus*), common buzzard (*Buteo buteo*), common kestrel (*Falco tinnunculus*), red-footed falcon (*Falco vespertinus*), hobby (*Falco Subbuteo*), grey partridge (*Perdix perdix*), common quail (*Coturnix coturnix*, endangered species), common pheasant (*Phasianus colchicus*), northern lapwing (*Vanellus vanellus*) and many others.

Protected areas

The proposed route of the R7 expressway Dunajská Lužná - Holice is located in an area where, according to Act No. 543/2002 Coll. on nature and landscape protection, the 1st (lowest) level of protection is applicable.

There is only one small-scale area protected under the Nature and Landscape Conservation Act in wider area of the designed structure, the protected area (PA) of park in Rohovce. PA is represented by a historic park in the village extending around the originally renaissance manor.

The nearest large protected area is represented by **Protected landscape area (PLA) of Dunajské Luhy**. PLA is situated on the Danube basin in geomorphological unit of Danube Plain, next to Slovak and Slovak-Hungarian section of the Danube from Bratislava to Veľkolélsky island in the district of Komárno. It consists of five separate parts. This unique area is entirely situated on recent aggradation bank of the Danube. The system of aggradation banks and accumulating depressions with a dense network of river branches with a prevalence of sedimentation accumulation was formed before the interventions in the natural hydrological regime of the Danube. Such a formed branch system is maintained partly in section from Dobrobrošť until Sap, but nevertheless it is one of the largest inland delta in Europe.

The whole territory of the PLA is entered in the List of Wetlands of International Importance (Ramsar Convention).

There is no interference to the large-scale or small-scale protected area in the corridor of the structure.

NATURA 2000 areas

There is no interference in the system of specially protected areas within NATURA 2000 in the corridor of the construction. The nearest protected areas of NATURA 2000 network is **SKUEV0090 Danube floodplains** and protected bird areas of **SKCHVÚ007 Danube floodplains** and **SKCHVÚ012 Lehnice**.

V. EXPECTED DEVELOPMENT ASSESSMENT BASED ON UNIMPLEMENTED INVESTMENTS

At present, the road I/63 is part of the selected road network and passes through built-up area of Dunajská Lužná, Báč, Rohovce, Blatná na Ostrove, Holice and Šamorín. It lacks suitable technical characteristics and traffic volume has negative effects on the environment in the above mentioned villages and town of Šamorín. It also has adverse effects on pedestrian traffic.

The aim of the construction is diverting traffic outside built-up areas of the affected municipalities, which would contribute to the removal of low technical parameters and reducing the negative effects of transport on the environment in the affected area.

If the expressway was not built, the traffic would be conducted on the existing road network of I., II. and III. class. The through road I/63 is not currently congested (except for urban parts of Šamorín). During rush hour there is a greater traffic accumulation at the intersection of roads.

Reconstruction of an existing road would require:

- completion of the pedestrian pathway network,
- a minimum outlook distance to stop on the whole route of the section,
- implementation of noise protection in built-up areas,
- implementation of light-controlled crossings on exposed areas in built-up areas.

Traffic forecast for no implementation

If the R7 expressway was not built, the traffic would be conducted on the existing road network. The most loaded road would be the first class road I/63. The road is built in category C 11.5/70 (80).

Based on outcomes of the current road I/63 in the section of Dunajská Lužná - Holice the following can be concluded:

- the section of Dunajská Lužná - Holice currently **does not meet** traffic loads,
- the section of Šamorín - Báč will meet the capacity prospective of traffic loads until about 2015,
- the section of Báč - Holice will meet the capacity prospective until the outlook of 2020.

These outcomes thus confirm the need for high-capacity communication in this area.

Population

Zero alternative is the busy road passing through the urban area of the affected municipalities. Pedestrian safety when crossing the busy road is provided by several crossings for pedestrians, but they are not without crash and there is still a risk of accidents. Transport safety is not only a serious transport, social, but also economic problem. Traffic accident rate is associated with major property damage, permanent injuries and very often irretrievable loss of human lives.

Black spots (BS)

It is a stretch of road (locality) in max. length of 0.5 km with obviously high (critical) number of consequences in a traffic accidents in relation to traffic conditions to monitor the road network.

According to the indicator of accidents density on the road I/63, the repeating black spot is considered the section from 23.300 to 23,800 km located within the boundaries of the town centre of Šamorín. It starts at the roundabout of the road II/503 and town interchange and ends 100 m before the exit lane to the petrol station. In 2008 there were 8 car accidents in this area, with one person seriously injured, two persons lightly wounded and the rest of material damage. The cause of car accidents is mainly breach of traffic rules. The safety in the section is negatively affected by the intensity of road and pedestrian traffic in the central town zone.

Other location on the road I/63, which is regarded as black spot, is the section from 28.450 to 28.870 km in rural area and partly within the boundaries of the village of Báč. It begins 150 m before the village of Báč and ends 70 m behind at the interchange with II/506 and local interchange in the village of Báč, just before the bus stop. In 2008 there were 8 car accidents in this area, with five persons lightly wounded and the rest of material damage. The cause of car accidents is breach of traffic rules. The safety in the section is negatively affected by the intensity of road traffic and increased speed, causing collisions especially when turning vehicles on the road II/506 and interchange. The section has not been considered a black spot so far.

Noise control at zero state

The population living near the road I/63 is already attacked by exceeded noise limit values. Exceeding the maximum permissible noise levels can be expected especially in the first housing row along the hold-up road I/63 in the affected municipalities, as shown in the following table:

Indicative number of inhabitants affected by levels above 50 dB at night by municipalities

Municipality	Buildings affected by noise above 50 dB	Occupancy	Number of inhabitants -	Population in the zone above 50 dB
Šamorín	96	3.08	12143	296
Báč	16	5.19	566	84

Blatná na Ostrove	19	3.53	826	68
Holice	2	3.30	1824	7

The traffic growth trend in the past 15 years results in continuous deterioration of noise conditions in the surroundings. Reducing rail freight transport has resulted in commodity transport via road network run all day long, which has a negative impact on surrounding buildings.

If the R7 expressway was not built, it would be necessary to minimize the impact of noise close to the road I/63. The solution involves façade modifications of adjacent houses (window replacement and installation of the equipment for mechanical ventilation - aeromat) where higher noise level is demonstrated based on measurements (construction and technical measures).

Since older family houses, which form the majority of the affected buildings, did not consider indoor forced ventilation, it can be assumed the exceeding of noise limits (40 dB during the day and 30 dB at night time) indoor of these buildings. This is mainly the construction of the buildings in the vicinity of road routes.

Implementation of noise barriers is limited by space available and mostly on lands of private owners of buildings as part of their fencing. The effectiveness of noise barriers and the appropriateness of their placement is conditioned by their distance from the road axis and outlook proportions in the road space.

Another measure is to reduce the speed limit within the boundaries of the village (traffic-organizational measures). In this case, it is the speed reduction at 40 km/h.

If the spot defect was removed, made by the municipality for the transit traffic by constructing the ring road, it would be possible to reduce noise levels in the vicinity of roads within the boundaries of the municipality (urban and transport measures) by diverting transit traffic .

VI. COMPLIANCE OF ACTIVITIES WITH THE LAND USE DOCUMENTS

Construction of R7 expressway is consistent with Land Use Regulation of Bratislava HTU.
Construction of R7 expressway is not consistent with Land Use Regulation of Bratislava HTU.

Dunajská Lužná - the structure is in compliance with the municipal LUD.

Šamorín - the structure is in compliance with the municipal LUD.

Kvetoslavov - the structure is in compliance with the municipal LUD.

Veľká Paka - Master Plan 2003 does not address the position of the expressway in relation to the village.

Trnávka - the structure is in compliance with the municipal LUD.

Holice - the structure is in compliance with the municipal LUD.

Macov, Blatná na Ostrove have not developed master plans.

Within the land-use measures the land-use planning documentation of Trnava HTU must be harmonized and in the future, if processed, the route of R7 must be incorporated in land-use planning documentation of the villages of Macov and Blatná na Ostrove.

VII. POSSIBLE IMPACT ON THE TERRITORIES

The proposed structure is located in an area covered by the first level of protection under the Act No. 543/2002 Coll. on nature and landscape protection. There are no areas which need special protection under the Act on nature and landscape protection within the route.

The most serious impacts of activities on environment and measures for their reduction or elimination

Impacts on air

Air pollution due to car traffic has a negative impact on the overall condition of the environment. The current road I/63 is the main line source of pollution in the section. In the future, the main line source of air pollution due to transport will be R7 Dunajská Lužná - Holice. Transport emission production will move into areas with no such pollution so far, and traffic air pollution in residential areas will be significantly reduced. Following the dispersion study results, which modelled the growth of air pollution due to traffic along the R7 expressway, we can say that at the anticipated traffic flow under normal weather conditions the limit values for CO or NO₂ will not be exceeded.

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. The quality of the road surface, drainage and maintenance throughout the year is supposed to ensure minimal dust during the operation of the expressway. The earthworks during construction will be executed at optimal soil moisture, which creates conditions for a minimum dust. Access roads during construction are regularly cleaned, thus reducing the possibility of secondary dust around the structure and on the access roads.

Impacts of noise

Construction of the R7 expressway is expected to change noise conditions in the area of the road I/63. The reduction in traffic is expected comparing to the present, and thus a decrease in noise load of traffic on the surrounding area. At the same time, the noise load will be removed to route of the newly built expressway. Road I/63 passes through populated areas of the affected villages and the town of Šamorín. Reducing traffic intensity causes a reduction in noise levels.

On the other hand, an increase of noise emissions in the vicinity of the newly built expressway is expected. Following the results of the noise study and based on the expected traffic volumes, the permitted noise hygiene limits will be exceeded on R7 in both day and night time in some locations. To eliminate the noise some reducing measures are designed in the form of noise barriers in the sections:

Noise barriers

Noise barrier at 2.855 km of R7 - 0.180 branch 5 on the right

Noise barrier at 3.185 - 4.565 km of R7 on the left

Noise barrier at 0.070 km of branch 6 - 6.000 of R7 on the right

Noise barrier at 7.555 - 9.210 km of R7 on the left

Noise barrier at 9.655 - 11.250 km of R7 on the right

Noise barrier at 11.000 - 13.100 km of R7 on the left

Noise barrier at 12.150 - 13.880 km of R7 on the right

Noise barrier at 15.270 - 16.630 km of R7 on the left

Noise barrier at 16.085 - 16.883 km of R7 on the right

Noise barrier at 16.915 - 17.026 km of R7 on the right

Installing noise barriers ensures permitted noise level in built-up areas of the affected municipalities.

Impacts on rock environment and soil

Regarding flat, very gently undulating relief with mild depressions and low aggradation banks and sand dunes no significant impacts on the rock environment are expected. However, soils in the subsoil of low embankments or at ground level are dangerous and highly frosty with capillary water regime. Concerning suitability of subsoil in the road plan, they are classified in

group VII. - IX., i.e. they provide less suitable to unsuitable subsoil, it is therefore necessary to consider replacing the soil in the core with a thickness of about 0.50 m with gravel using geosynthetics. Depth foundation is recommended for bridges.

Extracted unsuitable soils, which would not be possible to be technically integrated into the embankment body of the expressway, must be deposited on the stock pile of inappropriate soils, or otherwise used. Pursuant to opinions of municipal representatives, the land of the affected municipalities does not provide natural terrain conditions suitable for storing such soils (terrain depression, ravine, gravel pits).

Construction of the R7 expressway Dunajská Lužná - Holice will develop sustained but also temporary use of agricultural land. In relation to earthworks it will proceed in accordance with Act no. 220/2004 on the protection and use of agricultural land and Decree no. 508/2004 of the Ministry of Agriculture.

This means that in permanent land use that will serve for the construction of the road the humic layer is removed and stored in stock pile. When temporary land use for operating and handling belts in construction, also topsoil or humic layer overburden will be done and stored in stock pile. For permanent land use the piled up layer shall be used for other works - covering the slopes of the road body with humus or covering the slopes with humus to overcome the uneven terrain. In both cases it is necessary to handle the cultural humus layer carefully so as to prevent the erosion and degradation. This means that during the preparatory earthworks the thickness of the overburden humus layer needs to be carefully observed and spread up to 50 m in distance.

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 humus overburden of agricultural land prior to construction in terms of the methodological guideline of the Ministry of Agriculture no. 2341/2006-910.

Impacts on surface water and groundwater

Construction and operation of the expressway 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. There is also a risk of unsettled soil be adrift into the trough of the affected watercourses, that will increase turbidity and can cause adverse change in the flow.

Negative impact, or vulnerability of surface water is related to its openness resulting in an increased possibility of direct intrusion of contaminants produced during construction, or operation, of the road into watercourses. In general, small surface stream flows are the most vulnerable, especially during construction.

The vulnerability of groundwater depends on the permeability and thickness of the cover formation, hydrogeological characteristics and positions of watered collector and groundwater levels. Increased permeation rate of the collector generally creates more favourable conditions for relatively rapid migration of contaminants through groundwater flow. Accidents and inappropriate treatment of the surface cause a risk of deterioration of water quality by means of cumulative effect.

The potential risk is temporarily represented by construction yards and construction equipment (leaks of sewage and contaminants into groundwater).

During construction and operation of R7 it will be necessary to comply with the technical and organizational measures designed to avoid contamination of groundwater and production of negative effects on other environmental components. The vulnerability of groundwater in this area depends on the thickness and permeability of cover formation, the thickness of the aeration zone and hydraulic properties of flooded layer.

Impacts on nature and landscape

Construction will be implemented in the area covered by a first level of protection, without protected areas within the meaning of the Act on nature and landscape protection.

Impacts on biota are most apparent especially in the construction of the expressway in a free landscape, namely by:

- direct disposal of habitats,
- interference and influencing functions of habitats (water courses adjustments),
- creating or strengthening barriers in migration corridor,
- impact of noise, emissions and spreading on habitats near the expressway.

The structure will require the necessary tree felling in the route of the expressway. It is a vegetation of field roads and scattered landscaping green in the agricultural landscape. According to the stocktaking of woody plants, there will be 570 trees and 4, 510 m² of shrub plantations cut down with social value of € 462,270.39.

Construction of the R7 Dunajská Lužná - Holice does not harm the habitats of European importance.

VIII. COMPENSATORY MEASURES

Compensatory measures constitute a compensation for the harm suffered, mostly equity, economic and environmental harm.

in social and economic sector

During the construction of the expressway a close cooperation of investor, contractor and affected municipalities is expected in order to minimize the adverse impacts of construction on the population of the area. The consent for passage of heavy construction machinery and equipment through municipalities will be necessary, and to determine the conditions of transport on agreed routes with necessary maintenance (cleaning, watering to reduce dust) and subsequent repair of sections damaged by the heavy machinery. An agreement to ensure traffic flow and safety will be necessary on specific routes (speed restriction, entrance, etc.) as well as safety and reducing negative impacts on quality of life of the populations (e.g. exclusion of passages close to dwellings at night, 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

Compensatory measures related to soils result from the relevant legislative provisions, namely from the Act No. 220/2004 Coll. on the protection and use of agricultural land and amending Act No. 245/2003 Coll. on integrated prevention and control of environmental pollution and on amendment of certain laws, or Act no. 219/2008 Coll. amending and supplementing Act no. 220/2004 Coll.

for felling of trees growing outside forests

Compensatory measures relating to tree felling will be handled in accordance with the Act no. 543/2002 Coll. on nature and landscape protection and the implementing regulation no. 24/2003 Coll. on the determination of social value of woody plants (or according to the Ministry of Environment Decree no. 579/2008 Coll. amending Decree of the Ministry of Environment no. 24/2003 Coll.). The nature protection authority (municipality) in its agreement with the tree felling shall determine the terms and conditions of compensation for cut wood in the form of replacement planting or remittance of an amount equal to social value of disposed wood.

IX. COMPARISON OF DESIGN ALTERNATIVES

Construction of R7 was assessed in November 2009 pursuant to the Act on impact assessment. Final statement of the Ministry of Environment on R7 Dunajská Lužná - Holice was issued on 28 June 2010.

The final statement based on the conclusions of a comprehensive assessment of the proposed activity recommended to complete the proposed action: „R7 expressway Dunajská Lužná - Holice" **A variant blue or combination of A option blue and E purple, where the expressway will continue in E option purple after about 10 km of A option blue.**

The final statement recommends adjustments which have been reflected in the documentation for the zoning permit. There are the following differences between originally assessed alternatives and variants worked out in DZP:

Changing of the proposed activity relates to the following changes:

- changes in location of R7 expressway,
- changes in interchanges,
- changes in relocations and reconstruction of roads,
- relocations and reconstruction of roads, proposed within DZP, which were not mentioned in the Evaluation report (EIA),
- changes in bridge structures, resulting from changes in position of R7,
- bridge structures, proposed within DZP, which were not mentioned in the Evaluation report,
- changes in the structures of the Expressway Management and Maintenance Centre,
- changes in parking area structures,
- changes in relocations of utilities, resulting from a detailed geodetic survey, comments of network administrators and coordination with other structures of the relevant construction,
- changes in noise control measures

Beginning of the section of R7 Dunajská Lužná - Holice is shifted behind the interchange of Dunajská Lužná, approx. 280 m in stationing direction, as the whole interchange with the adjacent R7 section was included in the section of R7 Bratislava - Dunajská Lužná.

In the section from 0.000 to 2.500 km (then all stationing according to DZP), the route of the expressway was moved about 41 m southwards in the farthest point, in the section from 2.500 to 4.000 km, the route of the expressway was moved about 13 m northwards at the farthest point. This shift was conditioned by changing the horizontal conduct in the previous section of Bratislava - Dunajská Lužná.

Another change is the change in the category of the expressway at 0.000 to 0.360 km on the road R 31.5/120. The above changes do not represent a principle change in solution. Impacts on the population and the natural environment will therefore be essentially comparable with the originally assessed scope of the solution according variants.

All changes incurred in the preparation of project documentation as a result of route optimization based on the comments of representatives of the affected communities, authorities and professional organizations, competent to comment on technical solution of the proposed construction. The above changes in the position of the expressway imply changes in the detailed arrangement of other structures.

The route of the projected expressway is run in the corridor of an option, which was recommended by the Final opinion of Ministry of Environment of the SR dated on 28 June 2010.

In terms of water resources, the project implementation does not expect any significant influence in quality or quantity.

The route of recommended option and the proposed change is situated in an area with no large-scale or small-scale protected areas, the first level of protection is applied under the Act on nature and landscape protection, and there is no contact with sites of Community importance or protected bird areas as they are far enough from the proposed activity.

A significant change in relation to the population is the updating the scope of the anti-noise measures. Overall, the range of noise barriers has significantly increased from 1,350 m (in EIA) to 13,875 m (DZP). Construction of 10 noise barriers is designed in the section of the R7 expressway Dunajská Lužná - Holice with a total length of 13,875 m. Changes in the design of noise reducing measures result from changes in the legislative regulations and the comments of the affected municipalities. Noise barriers are integrated in the structure of R7, as such they do not constitute any further land use. In terms of protection of population from adverse effects of noise, they have a significant positive effect.

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 villages through which the whole transit traffic passes. Due to landscaping the technical structure will be incorporated into the landscape, which will positively influence the landscape image of the area.

Thus, the change in the proposed activity does not represent a principle change of the design. Impacts on the population and environment can be essentially comparable with the originally assessed scope of the solution according to options.

The construction will be carried out under a planning 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, June 2013

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.

Project Implementation Services, spol. s r. o.
Consultant under Consultancy Contract C31934