

## B. DATA ON DIRECT ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTIVITY INCLUDING HEALTH

### I. INPUT REQUIREMENTS

#### I.1. LAND

Construction of the Dunajská Lužná – Holice R7 expressway requires permanent and temporary use of agricultural, forest and other land. Temporary land use shall be after the construction completion reclaimed and its original use will be maintained. Indicative values of the land use are provided in the table:

Indicator	unit of meas.	A variant	B variant	E variant
Permanent PPF use	ha	64.4773	74.798	68.462
Permanent vineyard use	ha	5.26	2.972	0.93
Permanent LPF use	ha	0.438	0.215	0.438
Permanent use of other areas	ha	9.9108	10.901	8.073
<b>Total permanent use</b>	<b>ha</b>	<b>80.0861</b>	<b>88.886</b>	<b>77.903</b>
Temporary PPF use	ha	17.5535	22.984	16.684
Temporary vineyard use	ha	1.203	1.296	0.42
Temporary LPF use	ha	0.124	0.095	0.486
Temporary use of other areas	ha	7.749	7.643	8.292
<b>Total temporary use</b>	<b>ha</b>	<b>26.6295</b>	<b>32.018</b>	<b>25.882</b>

The biggest permanent use of the agricultural soil fund is with B variant and it is the lowest with A variant. However, the differences between the variants are minimal. In case of permanent use of the forest soil fund the biggest use is with A and E variants.

Apart from the land use which is required by the formation of the road and elevated junctions, it is necessary to consider land uses required due to relaying of electric lines and parallel roads.

Temporary land use shall apart from handling strips along the road (width of 5m) cover also areas of plant depots, material yards etc. Locations of plant depots is provided in Chapter I.5 Demands for Transport and Other Infrastructure.

#### I.2. WATER

##### *During construction*

Demands for water consumption during the road construction shall consist in the need of technological water (especially for concrete production), drinking water for the site employees and service water for hygienic purposes within the site equipment. During construction the site equipment shall be supplied with drinking water from local sources with which neither their location, nor the quantity of the water needed was quantified in this state of the construction preparation. The expected daily consumption of drinking water during construction shall be determined by the number of workers. Based on the valid legislation, the water consumption is determined to 20 m<sup>3</sup>/year per one worker. Service and technological water shall be taken from the receiving body close to the road route (based on the permission of the water management authority). Quantitative demands for water consumption were not specified since they are closely related to the options and equipment of the construction contractor which shall be selected in the public tender.

***During operation***

During the road operation there will be demands for technological water especially in regard to maintenance. Water quantity required for maintenance and vegetation adjustments can be quantified as early as in further phases of the project documentation.

***Water management solution of SSÚR (Expressway Management and Maintenance Centre) Holice***

Supply of drinking and fire water shall be ensured from the municipality of Holice via a PVC water connection DN 150 with length of 1,000.0m. This connection shall supply also water for fire fighting purposes and technological water necessary for road maintenance.

An alternative option is supply of drinking and technological water from the independent water source (a well).

**I.3. RAW MATERIALS**

Volume of earthworks covering individual variants of relaying and other related objects is set based on spatial position of relaying, position of reinforced slopes and prop walls, bridges with the effort for balanced volume of earthworks.

<b>Comparison of decisive components</b>	<b>A variant blue</b>	<b>B variant red</b>	<b>E variant violet</b>
Total volume of embankment (m <sup>3</sup> )	950,961.4	878,364.2	826,354.5
Total volume of excavation (m <sup>3</sup> )	22,494.9	42,151.4	25,520.9
Shortage of embankment (m <sup>3</sup> )	928,466.5	836,212.8	800,833.6

Regarding the overall shortage of filling material it is necessary to gain the filling material for building the formation from the mining area in the surrounding of the construction or deposits which shall be opened. A list of recommended deposits and mining areas is provided in Chapter C.II.2.5. Building Material Deposits.

**I.4. ENERGY SOURCES**

***During construction***

Electricity during implementation of the proposed activity shall be supplied from the existing distribution system. The electricity consumption is accumulated especially in the area of plant depots. Detail specification of the needs shall be included in the higher level of the project documentation.

***During operation***

Regarding vertical parameters of the territory, the sewerage system of R7 cannot be designed without pumping stations for which electricity shall be ensured. A network of pumping stations connected to electricity source is required to maintain the sewerage system and treatment of water.

Connection of those stations in the route shall be ensured from the existing 22kV overhead lines with branching and ending in the pole transformer station or from the independent 22kV line for several pumping stations which shall be administered by the road investor.

Building of a small Rohovce lay-by and the Centre of Road Administration and Maintenance in Holice which shall be supplied with electricity from two independent sources is proposed in the section. Total installed capacity/current power for a small lay-by is assumed on the level of 130/90kW and 600/300kW for SSÚR.

Connection of the Rohovce lay-by shall be designed from the existing 22kV overhead line. The assumed total installed capacity/current power for the lay-by on the right and left side is 130/90kW.

Connection of SSÚR Holice is designed using two air pipe connections from 22kV overhead lines.

## **I.5. REQUIREMENTS FOR TRANSPORT AND OTHER INFRASTRUCTURE**

### *During construction*

#### *Access roads*

In the period of the road construction in the assessed territory increased traffic demands for the Ist, IInd and IIIrd class roads, local roads and field paths shall be imposed in regard to supply the site with raw material and removal of material from excavations. Site transport shall be implemented within the delimited area of the road formation and its control strips.

#### *Site equipment*

There is site equipment situated near bridges and designed interchanges proposed for construction of the R7 expressway on routes of variants as follows:

#### *A variant blue*

- in the cadastral area of Dunajská Lužná, in km 5.660, in the "Dunajská Lužná" elevated junction,
- in the cadastral area of Kvetoslavov, in km 11.000, in the "Šamorín" elevated junction,
- in the cadastral area of Trnávka, in km 16.800, in the PD Trnávka area,
- in the cadastral area of Kostolná Gala, in km 23.110, in the "Holice" elevated junction.

#### *B variant red*

- in the cadastral area of Dunajská Lužná, in km 6.760, in the "Dunajská Lužná" elevated junction,
- in the cadastral area of Šamorín, in km 11.740, in the "Šamorín" elevated junction,
- in the cadastral area of Blatná na Ostrove, in km 21,900, in the PD Nový Dvor area,
- in the cadastral area of Kostolná Gala, in km 24.800, in the "Holice" elevated junction.

#### *E variant violet*

- in the cadastral area of Dunajská Lužná, in km 6.760, in the "Dunajská Lužná" elevated junction,
- in the cadastral area of Kvetoslavov, in km 11.100, in the "Šamorín" elevated junction,
- in the cadastral area of Trnávka, in km 17.750, in the PD Trnávka area,
- in the cadastral area of Kostolná Gala, in km 23.800, in the "Holice" elevated junction.

Site equipment (plant depot) shall contain the following:

- reinforced drainage areas for parking of vehicles including treatment of waste water in crude oil substance separators,
- reinforced and drainage areas of oil and diesel management including treatment of waste water in crude oil substance separators,
- closed and protected areas for storehouse of chemical building substances,
- reinforced areas for landfill of structural steel,
- adjusted areas of landfills of bulk material and aggregate,
- social facilities and sanitary facilities,
- office premises.

#### *Social infrastructure*

It is assumed that the need of labour force on site (regarding the work scope) shall be ensured from own resources of the work contractor thus there are no specific requirements for capacities of social infrastructure outside the site.

Within the activities registered in the surrounding settlements in the field of shopping facilities, restaurants and pubs, service establishments, the building activity and presence of workers on the site shall not mean increase of need for services compared to the current state for none from the considered variants.

***During operation***

In the operation period positive influence of the expressway on traffic in the region is expected. Since it is a transport construction, the demands for other traffic are not expected in the period of its operation.

**I.6. LABOUR FORCE REQUIREMENTS**

Demands for labour forces for the construction period cannot be expertly estimated at present. The volume and professional composition of labour forces is largely dependent on the pace of construction and machine-mechanization equipment of the construction. The required number of employees in the required professions shall be probably ensured by the supplier organisation.

**I.7. REQUIREMENTS FOR BUILT-UP AREAS**

The proposed activity in all variant solutions will not require any demolitions of residential or farm buildings. Demolitions shall cover only fences in the following scope:

- A variant blue*** – 0m of fence demolition,
- B variant red*** – 700m of fence demolition,
- E variant violet*** – 850m of fence demolition,

Deserted road sections shall be reclaimed and the acquired land shall be returned to the agricultural production or for other purpose. Technical reclamation shall consist of breaking of the existing roads, disassembly of various bodies which are a part of the lower part of roads (e.g. culverts, reinforced ditches etc.), removal of embankments, territory elevation and spreading of a humus layer. Subsequently, the biological reclamation follows. Within individual variants the following road reclamations are considered:

***A variant blue***

- III/06311 road with size of 4,110m<sup>2</sup>,
- field path in km 15.376 with size of 1,840m<sup>2</sup>,
- III/06313 road with size of 1,680m<sup>2</sup>,
- III/06323 road with size of 2,750m<sup>2</sup>,
- III/06324 road with size of 400m<sup>2</sup>,

***B variant red***

- II/503 road with size of 5,056m<sup>2</sup>,
- III/06338 road with size of 3,250 m<sup>2</sup>,
- III/06316 road with size of 2,074 m<sup>2</sup>,
- III/06323 road with size of 2,750 m<sup>2</sup>,
- III/06324 road with size of 400m<sup>2</sup>,

***E variant violet***

- III/06311 road with size of 4,110 m<sup>2</sup>,
- field path in km 16.050 with size of 1,840m<sup>2</sup>,
- III/06313 road with size of 1,680 m<sup>2</sup>,
- field path in km 22.340 with size of 1,560m<sup>2</sup>,
- III/06323 road with size of 4,160 m<sup>2</sup>.

## **II. OUTPUT DATA**

### **II.1. MAIN SOURCES OF AIR POLLUTION**

#### ***During construction***

During construction and regarding the work scope it is expected that roads used for material and raw material transport to the sites and subsequently earth and waste transport shall function as line sources of air pollution. It is especially increase of the amount of air pollutants and dust in the air due to freight traffic used on the site and increase of dustiness especially from vast earthworks. This influence is temporary and limited to the construction period. Intensity and surface scope depends on the number of currently open construction sections.

Main surface sources at considered variants are especially areas related to the road construction, thus these are surface sources of air pollution of the temporary character: site, plant depots and site equipment, temporary landfills of topsoil, soil, overburdens and construction material, liquidated or reconstructed roads of Ist, IInd and IIIrd class, field and forest paths and by-passes, temporary dumping areas of excessive excavated earth or humus overburden.

#### ***During operation***

The R7 expressway Dunajská Lužná – Holice shall become a new line source of air pollution due to transport in the respective area.

According to the results of the Dispersing Study after the R7 expressway commissioning **neither the limit value for CO, nor for NO<sub>2</sub> will be exceeded** not even in close vicinity of the expressway in all variants. Concentration of NO<sub>2</sub> in 2020 will be as close as possible to the limit value, however, it shall not exceed 12.5% of the limit value. The highest concentration of CO shall not exceed 1.8% of the limit value even in the most adverse disperse and operating conditions. The difference among individual variants in terms of their influence on air pollution of the surrounding municipalities is minimal.

Complete assessment of the emission situation is a content of the disperse study attached to the evaluation report.

### **II.2. WASTE WATER**

#### ***During construction***

The volume of waste water during construction cannot be currently specified. Possible waste water from concrete production, vehicle cleaning in the site facilities shall be discharged after treatment in primary settling tanks on the site. Sanitary facilities for workers in the site facilities shall be discharged into septic tanks the waste from which shall be transported to the waste water treatment plant.

Regarding the location of the expressway in the PWA Žitný Island and in the sanitary protection zone of IInd degree of natural healing resources in Čilistov, it is necessary to observe the standards pursuant to the Water Act and its implementing regulation during construction. Eventual accidents shall follow the elaborated plan in case of emergency worsening of water quality.

#### ***During operation***

Storm water from the R7 expressway, from interchanges and bridges shall be discharged to crude oil separators (ORL). Crude oil separators shall be designed to the required size of storm water with the output value of 0.1 mg/l of crude oil substance. Considering the road route formation line, the water will be drained by means of infiltration channels. These shall be implemented after the crude oil

separator. The crude oil separators up to  $Q=600$  l/s were designed. Regarding the minimum slope of the sewerage system, there is a PVC pipe designed with min. DN 500. Storm intensity  $Q = 142.0$  l/s.ha with periodicity  $p = 0.5$  shall be considered.

***A variant blue***

<b>Variant A</b>	<b>Stationing in km</b>	<b>DN of the sewerage system</b>	<b>Sewerage system length in m</b>	<b>ORL Q (l/s)</b>	<b>Note</b>
1	5.700	500	900	300	outflow to infiltration ditch
2	6.300	500	900	300	outflow to infiltration ditch
3	7.100	500	800	300	outflow to infiltration ditch
4	8.000	500	900	300	outflow to infiltration ditch
5	8.800	500	800	300	outflow to infiltration ditch
6	9.700	500	900	300	outflow to infiltration ditch
7	10.600	500	900	300	outflow to infiltration ditch
8	11.500	500	900	300	outflow to infiltration ditch
9	12.300	500	800	300	outflow to infiltration ditch
10	13.200	500	900	300	outflow to infiltration ditch
11	14.000	500	800	300	outflow to infiltration ditch
12	14.900	500	900	300	outflow to infiltration ditch
13	15.800	500	900	300	outflow to infiltration ditch
14	16.600	500	800	300	outflow to infiltration ditch
15	17.500	500	900	300	outflow to infiltration ditch
16	18.400	500	900	300	outflow to infiltration ditch
17	19.300	500	900	300	outflow to infiltration ditch
18	20.200	500	900	300	outflow to infiltration ditch
19	21.000	500	800	300	PWA
20	21.800	500	800	300	PWA
21	22.700	500	900	300	PWA
22	23.250	500	550	300	PWA

***B variant red***

<b>Variant B</b>	<b>Stationing in km</b>	<b>DN of the sewerage system</b>	<b>Sewerage system length in m</b>	<b>ORL Q (l/s)</b>	<b>Note</b>
1	6.758	500	450	300	outflow to infiltration ditch
2	7.100	500	800	300	outflow to infiltration ditch
3	8.000	500	900	300	outflow to infiltration ditch
4	8.800	500	800	300	outflow to infiltration ditch
5	9.700	500	900	300	outflow to infiltration ditch
6	10.600	500	900	300	outflow to infiltration ditch
7	11.500	500	900	300	outflow to infiltration ditch
8	12.300	500	800	300	outflow to infiltration ditch
9	13.200	500	900	300	outflow to infiltration ditch
10	14.000	500	800	300	outflow to infiltration ditch
11	14.900	500	900	300	outflow to infiltration ditch
12	15.800	500	900	300	outflow to infiltration ditch
13	16.600	500	800	300	outflow to infiltration ditch
14	17.500	500	900	300	outflow to infiltration ditch
15	18.400	500	900	300	outflow to infiltration ditch
16	19.300	500	900	300	outflow to infiltration ditch
17	20.200	500	900	300	outflow to infiltration ditch
18	21.000	500	800	300	PWA

19	21.800	500	800	300	PWA
20	22.700	500	900	300	PWA
21	23.600	500	900	300	PWA
22	24.800	500	1,200	400	PWA

**E variant violet**

Variant E	Stationing in km	DN of the sewerage system	Sewerage system length in m	ORL Q (l/s)	Note
1	5.700	500	900	300	outflow to infiltration ditch
2	6.300	500	900	300	outflow to infiltration ditch
3	7.100	500	800	300	outflow to infiltration ditch
4	8.000	500	900	300	outflow to infiltration ditch
5	8.800	500	800	300	outflow to infiltration ditch
6	9.700	500	900	300	outflow to infiltration ditch
7	10.600	500	900	300	outflow to infiltration ditch
8	11.500	500	900	300	outflow to infiltration ditch
9	12.300	500	800	300	outflow to infiltration ditch
10	13.200	500	900	300	outflow to infiltration ditch
11	14.000	500	800	300	outflow to infiltration ditch
12	14.900	500	900	300	outflow to infiltration ditch
13	15.800	500	900	300	outflow to infiltration ditch
14	16.600	500	800	300	outflow to infiltration ditch
15	17.500	500	900	300	outflow to infiltration ditch
16	18.400	500	900	300	outflow to infiltration ditch
17	19.300	500	900	300	outflow to infiltration ditch
18	20.200	500	900	300	outflow to infiltration ditch
19	21.000	500	800	300	PWA
20	21.800	500	800	300	PWA
21	22.700	500	900	300	PWA
22	23.250	500	550	300	PWA

During operation the estimated amount of waste water from R7 road shall be as follows:

Variant	A blue	B red	E violet
Amount of waste water m <sup>3</sup> .year <sup>-1</sup>	229,192	235,042	223,044

**Qualitative indicators of discharged waste water**

In the operation period, waste water shall be storm water and soil water from the road surface. Dirt from road operation comes from rinsing of crude oil substances from vehicles, emissions and immissions from exhaust gases, winter maintenance means, soil water from infrastructure and particles from tyre abrasion and road cover.

**Pollutants in waste water from road surface**

Physical and chemical component	Achieved concentration (mg/l) on the road			<sup>1</sup> Indicator of drinking water quality (mg/l)	<sup>2</sup> General requirements for surface water quality (recommended value in mg/l)
	A=700-7,000 B=1-2	A>7,000 B=2-3	<sup>3</sup> summer rinsing of roads		
<sup>4</sup> Rigidity	5.5 - 4.5	12.5	2	—	—
Mineralization	150 - 7,000	15,000	400	1,000	<sup>5</sup> 1,000
Nitrates	0.70	105	4	50	<sup>6</sup> 22.12
CHSK <sub>Mn</sub>	2.17	37	130	3	15

Physical and chemical component	Achieved concentration (mg/l) on the road			<sup>1</sup> Indicator of drinking water quality (mg/l)	<sup>2</sup> General requirements for surface water quality (recommended value in mg/l)
	A=700-7,000 B=1-2	A>7,000 B=2-3	<sup>3</sup> summer rinsing of roads		
<b>BSK<sub>5</sub></b>	1.12	15	40	–	7
<b>Ammonions</b>	0-1	2.1	5	0.5	<sup>7</sup> 1.28
<b>Calcium</b>	20-150	325	75	>30	200
<b>Magnesium</b>	8-50	75	6	10.0 to 30.0	100
<b>Manganese</b>	0.1-1.3	2.8	0.8	0.05	0.3
<b>Iron</b>	0-3.5	9	6	0.2	2
<b>Chlorides</b>	70-4,500	10,000	55	100	200
<b>Sulphates</b>	7-80	250-500	90	250	250
<b>Anionic tenside</b>	0.05-0.25	1.5	2	-	1.0
<b>Cadmium</b>	0-0.007	0.022	-	0.003	0.005
<b>Plumbum</b>	0-0.03	0.135	0.06	0.01	0.02
<b>Copper</b>	0-0.035	0.05	0.27	1.0	0.02
<b>Chromium</b>	0-0.015	0.02	0.015	0.05	0.1
<b>Nickel</b>	0-0.03	0.045	0.05	0.02	0.02
<b>Vanadium</b>	0-0.01	0.012	0.05	-	0.02
<b><sup>8</sup> Reaction of water</b>	6.1-7.8	7.8	5.9-7	6.5 - 8.5	6 - 8.5

Source: Table modified according to the report - Pollution of storm water from road VÚD Žilina Research area of roads and airfields Brno (Znečistenie zrážkových vôd z pozemných komunikácií VÚD Žilina Výskumná oblasť pozemných komunikácií a letiskových plôch Brno), 1990

Explanatory notes:

- A – Number of vehicles per 24 hours (in case of transport load up to 700 veh./day and amount of chemical spread up to 1kg/m<sup>2</sup>/winter the storm water from the road is deemed to be clean)
- B – Amount of chemical spread (kg/m<sup>2</sup>/winter)
- 1 – Regulation of the Government of the Slovak Republic No. 354/2006 Coll. pursuing the requirements for water intended for human consumption and control of water quality intended for human consumption
- 2 – Regulation of the Government of the Slovak Republic No. 296/2005 Coll. establishing qualitative targets for surface waters and limit values of pollution indicators of waste water and special waters
- 3 – The mentioned concentrations apply to water immediately after rain with precipitation of 6mm after 10 days of dry-weather period
- 4 – Parameter in unit mmol/l
- 5 – Soluble substances dried at 105°C
- 6 – The value calculated from the limit for nitrate nitrogen (5.0 mg/l) mentioned in the Regulation of the Government of the Slovak Republic No. 296/2005 Coll.
- 7 – The value calculated from the limit for ammonia nitrogen (1.0 mg/l) mentioned in the Regulation of the Government of the Slovak Republic No. 296/2005 Coll.
- 8 – pH - unitless parameter.

## II.3. WASTE

Waste management is related to the implementation of the respective construction since waste shall originate in the construction phase and subsequently, also during operation of the expressway. Waste disposal is regulated by Act No. 223/2001 Coll. on Waste and on amendment of certain acts. Pursuant to Art. 19 par. 1, subpar. d) of Act No. 223/2001 Coll. on Waste, the construction contractor shall dispose the waste at its activity or it shall offer unused waste for disposal to the others. In case of waste unsuitable for use it shall be inevitable to ensure its wholesome appreciation or disposal via contractual customers. During construction and operation it shall be necessary to mind minimization of the amount of unsorted communal waste. The originated waste shall be sorted out and stored in the respective regulated landfill or in scrapyards.



Waste is categorized pursuant to Decree of the Ministry of Environment of the Slovak Republic No. 284/2001 Coll. laying down the Waste Catalogue as amended by the Decree of the Ministry of Environment of the Slovak Republic No. 409/2002 Coll. and Decree No. 129/2004 Coll.

***During construction***

Waste originating during construction consists mostly of excess excavation material and material from demolitions. Excavation soil from earthworks on the site, unless it is polluted with harmful substances and has the character of waste, shall be in dependence on its geotechnical properties used either for backfill of trenches, into fills for roads as a subbase under the road structure or unless it is suitable for this purpose, it shall be transported to the landfill or dumping site.

The contractor shall be obliged to ensure the waste disposal method for waste originating during construction work under the contract.

Individual types of waste originating during construction and operation are provided in the following table.

*Assumed types of waste originating during the R7 expressway construction*

<b>Number of the waste type</b>	<b>Name of the waste type</b>	<b>Category</b>	<b>Waste origin</b>	<b>Recommended disposal method</b>
01 05 04	Sludge from drills not polluted with harmful substances	O	site preparation	
02 01 07	Waste from forest management	O	preparation of the territory, tree cutting	SK, SP
08 01 11	Waste colours and varnishes containing organic solvents or other hazardous substances	N	construction works	SP
10 13 14	Waste concrete and concrete mud	O	construction works	SK
13 02 06	Synthetic engine, gear and lubricating oils	N	plant depots	SP, RK
15 01 10	Packaging containing residues of hazardous substances or contaminated by dangerous substances	N	plant depots	
15 02 02	Absorbing agents, filtration materials including oil filters otherwise non-specified, cleaning rags, protective clothes contaminated with hazardous substances	N	operation of mechanisms, plant depots	SP
16 01 13	Brake fluids	N	operation of mechanisms	SP
16 06 01	Lead batteries	N	in the operation of mechanisms	RK
17 01 01	Concrete	O	demolition, construction works	RK
17 01 06	Mixtures or separated components of concrete, bricks, wall tiles, paving tiles and ceramics containing hazardous substances	N	demolition of buildings	SK
17 01 07	Mixtures of concrete, bricks, wall tiles and ceramics other than those mentioned in 17 01 06	O	demolition of buildings	SK
17 02 01	Wood	O	demolition of buildings	SP
17 02 02	Glass	O	demolition of buildings	RK
17 02 03	Plastic	O	demolition of buildings	RK
17 03 02	Bituminous mixtures other than those mentioned in 17 03 01	O	demolitions, construction works	RK

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<b>Number of the waste type</b>	<b>Name of the waste type</b>	<b>Category</b>	<b>Waste origin</b>	<b>Recommended disposal method</b>
17 04 07	Mixed metals	O	demolitions	RK
17 04 11	Cables other than those mentioned in 17 04 10	O	relaying of lines	
17 05 03	Soil and stones containing dangerous substances	N	handling with crude oil substances, accidents	SK
17 05 04	Soil and aggregates other than those mentioned in 17 05 03	O	demolitions, construction	SK
17 05 05	Excavated soil containing hazardous substances	N	construction, relaying	SP
17 05 06	Excavated soil other than the one mentioned in 17 05 05	O	construction works	Use in fills
17 09 04	Mixed waste from constructions and demolitions other than the one mentioned in 17 09 01, 17 09 02, 17 09 03	O	demolitions, construction, relaying	RK, SK
19 10 01	Waste from iron and steel	O	demolitions, construction works	RK
19 12 06	Wood containing hazardous substances	N	demolitions, construction works	SP
20 01 01	Paper and paperboard	O	construction works	RK
20 02 01	Biodegradable waste	O	tree felling	SK
20 03 01	Mixed communal waste	O	plant depot operation	SP

*Explanatory notes: O – other waste, N – hazardous waste, SK – storage at landfill, RK – recycling, SP – combustion*

***During operation***

Solid waste originates on roads due to operation of vehicles when especially from freight vehicles due to insufficient care of the vehicle crew the parts of the transported mainly bulk material are falling on the road. The second waste component is mud and impurity falling out from the vehicle wheels and chassis on the road. Such waste is being removed by cleaning mechanisms on regular basis by the road administrator and it is transported to the central landfill.

Apart from this waste there is also waste from adjustment of green areas on slopes.

Further type of waste is waste originating due to emergency transport situation on the road.

Liquid waste originating during the road operation includes rinsing water from the storm water discharged through inlets into the road sewerage system. It is ended by crude oil substance separators and subsequently water discharged into the receiving body shall be treated.

*Assumed types of waste originating during the R7 expressway operation*

<b>Number of the waste type</b>	<b>Name of the waste type</b>	<b>Category</b>	<b>Waste origin</b>	<b>Recommended disposal method</b>
02 01 03	Waste plant tissues	O	green vegetation treatment	SP, KN
08 01 11	Waste colours and varnishes containing organic solvents or other hazardous substances	N	road maintenance	SP
08 01 13	Sludge from colours or varnish containing organic solvents or other hazardous substances	N	road maintenance	SP
08 01 17	Waste from colour or varnish removal containing organic solvents or other hazardous substances	N	road maintenance	SP
13 05 02	Sludge from oil from water separators	N	operation of road sewerage system	SP
13 05 06	Oil from oil from water separators	N	operation of road sewerage system	SP
13 07 02	Petrol	N	road maintenance	SP
13 08 02	Other emulsions	N	road maintenance	SP
15 01 06	Mixed packages	O	road maintenance	SP
15 01 10	Packaging containing residues of hazardous substances or contaminated by dangerous substances	N	road maintenance	SP, SK
15 02 02	Absorbing agents, filtration materials including oil filters otherwise non-specified, cleaning rags, protective clothes contaminated with hazardous substances	N	removal of traffic accident, road maintenance	SP
16 01 03	Used tyres	O	road maintenance	RK
16 01 07	Oil filters	N	road maintenance	
16 01 13	Brake fluids	N	road maintenance	SP
17 01 01	Concrete	O	road maintenance	RK
19 10 01	Waste from iron and steel	O	road maintenance	RK
19 10 02	Waste from non-ferrous metals	O	road maintenance	RK

19 12 06	Wood containing hazardous substances	N	road maintenance	SP
20 01 21	Fluorescent lamps and other waste containing mercury	N	road maintenance	FCH
20 02 01	Biodegradable waste	O	green vegetation treatment	KN, SK
20 03 01	Mixed communal waste	O	road cleaning	SP
20 03 03	Waste from street cleaning	O	road cleaning	SK
20 03 06	Waste from sewerage system cleaning	O	operation of road sewerage system	SK

*Explanatory notes: O – other waste, N – hazardous waste, SK – storage at landfill, RK – recycling, SP – combustion, KN – composting, FCH – physical-chemical adjustment*

### ***Method of waste disposal***

Waste disposal during construction and during operation shall be managed according to the strategy and concept of waste management of the Slovak Republic and according to the valid legal regulations for waste management.

Basic principles of waste management regulation shall include:

- prevention of waste origination,
- material and energy recovery of waste,
- environmentally-friendly waste disposal.

In such case it is possible to prevent waste origination by good organisation of work, thorough separation of waste from mined natural material and by avoidance of emergency situations especially during construction.

Unsuitable soil in the subbase of embankments as well as in the subbase of the road bed (with dangerous frosting) shall be replaced in thickness of approx. 0.50m to 1.0m and shall be used as filling of intra-interchange space.

Material appreciation of waste shall be considered in case of waste concrete, reinforced concrete and asphalt from demolition of objects, reinforced areas and roads. Recycling of those types of waste is possible directly on spot (mobile recycling units). Recycled materials should be preferably used directly at construction of a new expressway.

Metallic waste from production in the site facilities shall be taken to the scrapyards. Bulk and materials from demolitions of the reconstructed existing roads shall be used for recycling. Milled material of the road asphalt layers shall be used after recycling repeatedly for treatment of road surface of lower classes. Non-cemented road layers shall be used as building material for road construction.

Excavated earth shall be checked for presence of hazardous substances, in case of identification of such substances the mined earth shall be disposed as hazardous waste pursuant to Act No. 223/2001 coll. on Waste. The extract analysis according to Annex No. 14 of the Decree No. 283/2001 Coll. as amended is recommended. If the water extract of waste exceeds the limit values, it is necessary to handle it as hazardous waste and dispose of it at the hazardous waste landfill or ensure its decontamination (biodegradation in case of pollution with crude oil substances) in the specific equipment. In case of vast contamination of environment during construction, it is necessary to report the respective state to the Slovak Environmental Inspection and to deal with the liquidation method of an accident and its maintenance in cooperation with the experts.

Waste from woody species cutting shall be materially appreciated or energetically recovered. Mixed communal waste shall be transported by the authorized company and disposed via separation. Environmentally friendly waste disposal shall be ensured during construction by the contractor of construction works and during the operation by the construction operator through contracts concluded with legal or natural persons authorized to perform the required type of activity.

Registration of volumes and types of the produced waste shall be kept pursuant to the Decree of the Ministry of Environment of the Slovak Republic No. 283/2001 Coll. as amended.

After commissioning the construction operator shall be obliged to prepare the waste management programme in compliance with the valid legislative regulations. Moreover, it shall be obliged to prepare the operating instructions on management of hazardous waste and the emergency plan for management of hazardous waste for its employees.

## **II.4. NOISE AND VIBRATIONS**

### **II.4.1. Noise**

#### ***During construction***

Built-up areas of the concerned municipalities and the town of Šamorín which are in contact with the route of the R7 expressway in the Dunajská Lužná – Holice section are currently attacked by noise from traffic which is caused especially by high intensities of automotive transport on the I/63 road. Increase of noise and vibrations from traffic of heavy building mechanisms in the section among sources of material, dumping areas of excavated earth and construction is expected during construction. Building practise proves that in order to complete the construction as soon as possible, the builders often fail to adhere to the conditions and restrictions determined in the building permit and inhabitants are disturbed by excessive noise even outside of the permitted working hours or during public holidays.

In case of construction activity it is possible to consider indicative values of individual machines:

- freight vehicles of the Tatra type                      87 - 89 dB(A)
- compaction machines                                      83 - 86 dB(A)
- earth loaders    86 - 89 dB(A)

The range of noise levels is determined by the output of the respective machine and its loading. Increase of noise level when using several machines does not have linear additive character. It can be presumed that when deploying several machines the noise level increases to 90 – 95 dB(A). This noise cannot be eliminated by anti-noise measures regarding variability of position of machine deployment and ground configuration.

If the inhabitants complain of excessive noise, the respective building authority in cooperation with the Regional Public Health Authority may have the noisiness measured. The builder shall be obliged to ensure noise measurement which originates during construction activity and not to exceed the permissible values. Complaints of inhabitants are dealt with by the respective environment office, the noise measurements are performed at its initiative.

#### ***During operation***

Assessment of influence of variant solutions for noise situation in the concerned area is subject to the Noise Study (Dopravoprojekt a.s. 2009) which forms annex to the Evaluation Report.

Commissioning of the R7 expressway shall cause reduction of noise emission in urban areas of the concerned settlements which are currently used by the transit traffic. Concurrently, however, a new route of the expressway shall influence the environment in which the traffic noise did not dominate before.

Based on the theoretical calculation, in places where exceeding of maximum permissible noise value is expected, the proposed anti-noise protection is implemented using anti-noise screens. The proposed measures shall reduce noise level to the permissible level.

### **II.4.2. Vibrations**

#### ***During construction***

Mechanical oscillation and shakes which may be transferred into construction buildings and residential buildings are during construction induced by external influences – building activities such as bridge foundations, sheeting, vibration compaction. Surface layers of terrestrial crust shall ruffle due to excitation by oscillation sources and waves are spread in the soil mass in all directions (longitudinal and transverse waves). Geological and soil-mechanical conditions influence substantially

the size of response to excitation which is spread in soil into foundations of the surrounding buildings. Foundations of buildings transfer both horizontally and vertically, seismic effects from the foundation slab into individual storeys while it is proved that oscillation in higher storeys is in majority of cases bigger than oscillation of building foundations. The risk of vibrations shall depend on the distance of the closest built-up area.

***During operation***

Regarding the distance of variant solutions from the closest built-up area, the effects of vibrations during the operation of the proposed activity are not expected.

**II.5. RADIATION AND OTHER PHYSICAL FIELDS**

Regarding the character of the construction, there is no assumption of the radiation production or other physical fields.

**II.6. HEAT, ODOUR AND OTHER OUTPUTS**

Influence of heat and smells spread into surrounding from the expressway operation are not assumed.

**II.7. ADDITIONAL INFORMATION**

**II.7.1. Induced Investments**

In the area of the proposed activity there are underground services requiring protection or change of their position in the place of crossing. The estimated total range of induced investments is provided by the following overview:

*Water conduits*

Within the R7 construction crossing of the existing local water conduits and distance water conduits administered by water management companies Západoslovenská vodárenská spoločnosť, a.s., Nitra and Bratislavská vodárenská spoločnosť.

Local water conduits are administered by individual local plants, OZ Dunajská Streda or individual municipalities. The existing water conduits shall not be affected in A variant.

<b>Variants</b>	<b>Stationing</b>	<b>DN</b>	<b>Concreting (m)</b>	<b>Relaying length (m)</b>
B variant	7.050	1,200	40	-
	17.300	160	-	120
	18.100	160	-	150
E variant	7.050	1,200	40	-

*Irrigations*

Reclamation facilities for drainage and irrigations are built on a bigger part of the concerned land through which the R7 route is led. Majority of built reclamation facilities are irrigations.

Crossing of the respective facilities shall be implemented by protection of the existing sleeve pipes or, if necessary, by relaying of the irrigation pipeline.

<b>Variants</b>	<b>Stationing</b>	<b>DN</b>	<b>Relaying length (m)</b>	<b>Protection using a sleeve pipe (m)</b>
A variant	7.000-8.500	200	300	DN 400
	12.000-14.000	300	800	DN 500
	15.000-16.000	200	300	DN 400
	18.000-23.250	400	500	DN 600
B variant	7.000-8.500	200	300	DN 400

	12.000-14.000	300	800	DN 500
	15.000-16.000	200	300	DN 400
	18.000-24.850	400	500	DN 600
E variant	7.000-8.500	200	300	DN 400
	12.000-14.000	300	800	DN 500
	15.000-16.000	200	300	DN 400
	18.000-23.250	400	500	DN 600

#### *Gas pipelines*

The designed route of the R7 expressway crosses main high-pressure gas pipelines. Medium-pressure gas pipelines are in the municipalities and towns.

Variants	Stationing	DN	Relaying length (m)	Protection using a sleeve pipe, protective pipe (m)
A variant	7.000	100	80	DN 300, 40m
	10.800	300	-	DN 500, 40m
	11.600	400	150	DN 500, 40m
	15.600	300	-	DN 500, 40m

B variant	7.000	100	400	DN 300, 40+20m
	12.000	200	-	DN 500, 40m
	17.000	300	90	DN 600, 40m
	21.500	300	-	DN 600, 40m
E variant	7.000	100	80	DN 300, 40m
	10.800	300	-	DN 500, 40m
	11.600	400	150	DN 600, 40m
	15.600	300	-	DN 500, 40m

#### *Heavy-current*

There are heavy-current lines and facilities administered by *Západoslovenská energetika a.s.* on the concerned territory of the R7 expressway, in the Dunajská Lužná – Holice section which shall be subject to relaying.

Variants	Stationing	Type of line	Line modification (m)	
			New route	Original route
A variant	10.000	HV 22kV	400m	-
	13.820	HV 22kV	-	200m
	18.750	HV 22kV	400 m	-
	22.300	HV 22kV	-	300 m
B variant	8.150	HV 22kV	-	300 m
	10.250	HV 22kV	200m	-
	13.100	HV 22kV	-	200m
	14.200	HV 22kV	400 m	-
	17.600	HV 22kV	-	200m
	20.000	HV 22kV	-	200m
E variant	8.150	HV 22kV	-	300m
	10.000	HV 22kV	400 m	-
	13.820	HV 22kV	-	200 m
	18.750	HV 22kV	400 m	-
	23.200	HV 22kV	-	300m

#### *Weak-current*

In the concerned section of the R7 expressway, in the Dunajská Lužná – Holice section there are weak-current lines and facilities administered by Slovak Telecom a.s., local and distance cables and

cables and facilities administered by Orange Slovensko a.s. which shall be subject to relaying or protection.

Variants	Stationing	Type of line	Line modification (m)	
			New route	Original route
A variant	9.700	DOK T-com a.s.	-	20m
	11.100	DK T-com a.s.	-	20m
	22.900-23.250	DK and DOK T-com a.s.	350m	-
	23.100	DK and DOK T-com a.s.	-	20m
	11.100	MK T-com a.s.	-	20m
	18.530	MK T-com a.s.	-	20m
	23.150-23.250	MK T-com a.s.	100m	-
	21.100	OK and HDPE Orange Slovensko a.s.	-	20m
22.900-23.250	OK and HDPE Orange Slovensko a.s.	350m	-	

B variant	6.750	DK and DOK T-com a.s.	-	50m
	10.340	OOK, HDPE T-com a.s.	-	20m
	11.100	DK T-com a.s.	-	20m
	19.000-24.800	DK and DOK T-com a.s.	580m	-
	24.660	DK and DOK T-com a.s.	-	20m
	11.700	MK T-com a.s.	-	20m
	12.800	MK T-com a.s.	-	20m
	20.600	MK T-com a.s.	-	30m
	21.100-21.500	MK T-com a.s.	400m	-
24.700-24.800	MK T-com a.s.	100m	-	
B variant	6.750	OK and HDPE Orange Slovensko a.s.	-	50m
	19.000-24.800	OK and HDPE Orange Slovensko a.s.	5,800m	-
E variant	10.380	OOK, HDPE T-com a.s.	-	20m
	11.780	DK T-com a.s.	-	20m
	23.880	DK and DOK T-com a.s.	-	30m
	19.000-24.800	DK and DOK T-com a.s.	580m	-
	11.780	MK T-com a.s.	-	20m
	19.200	MK T-com a.s.	-	20m
	23.590	MK T-com a.s.	-	20m
	23.880	MK T-com a.s.	-	30m
21.570	OK and HDPE Orange Slovensko a.s.	-	20m	



## **Disclaimer**

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The name of this document in Slovak is *Správa o hodnotení vplyvov*. The file name has not been changed.

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