

MOTORWAY D1

HUBOVÁ - IVACHNOVÁ

The notice about the changes of the proposed activity according to the Supplement 8a of the Act No. 24/2006 Coll. on environmental impacts and amending certain laws

NON TECHNICAL SUMMARY

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NON TECHNICAL SUMMARY

I. THE PURPOSE OF CONSTRUCTION

The proposed project of the D1 motorway is a section of the Multimodal Transport Corridor V, modified in the territory of Slovakia by branch „A“ on the route Bratislava – Žilina – Košice – Uzhorod SR/Ukraine border, in compliance with the routing of European multimodal transport corridors that are defined by the Pan-European Transport Conference (held in Crete in 1994) and with the territorial plan of the High Territorial Unit of Zilina Region (VUC). This project is a section of the D1 motorway, which will form the backbone of the motorway network in the Slovak Republic.

The proposed section Hubová – Ivachnová of the D1 motorway, links to section D1 Ivachnová - Hybe (under operation) and will result in the shift of a substantial part of all traffic particularly heavy transit traffic from national road I/18. After the construction of the D1 motorway section the existing road I/18 will mainly serve local regional transport and will serve the communities in the adjacent territory.

II. THE BRIEF DESCRIPTION OF TECHNICAL SOLUTION

The beginning of the section D1 Hubová – Ivachnová is in the grade-separated interchange "Hubová" that will ensure the connection of all directions. The project contains the tunnel "Čebrať" of length app.2km, leading under the mountain massif the same name and will form a northern bypass of the town Ruzomberok. The connection to the road I/59 is provided by interchange „Likavka“, located at km app.6,000 of the D1 motorway, to the north of the village Likavka. At the end of the section the motorway route is continuously connected to the existing motorway section near Ivachnova municipality. This junction also includes a connection with the existing road I/18 from the direction of the town Ruzomberok. Beyond the end of designed section of the D1, on the left, is designed rest area Ivachnova. Its location is determined by natural conditions and surrounding scenery. The respective rest area completes an existing rest area on the right, providing a large two-way rest area 'Ivachnova'. The total length of the proposed project D1 Hubová – Ivachnová is 15,272 48 km.

Localisation of the project :

The project is located in the Zilina region, in cadastral areas Švošov, Hubová, Hrboltová, Likavka, Martinček, Lisková, Ivachnová, Liptovský Michal.

Technical solution

- category of motorway D1 : D 26,5/100
- total length of motorway D1 : 15,272 48 km
- Interchanges : MÚK „Hubová“ with road I/18
- : MÚK „Likavka“ with road I/59
- : modification of the existing interchange "Ivachnová"
- Tunnel : Čebrať, in category 26,5/80, in total length 2 026 m
- bridges : on the motorway D1 - 12 pcs; in length 5 204,59 m
- : over the motorway D1 - 3 pcs; in length 971,4 m
- : on the ramps of interchanges - 4 pcs; in length 177,93 m
- : pedestrian bridge over the motorway - 1 pc; in length 74,84m
- : widening of the bridge – 1pc, in total length 6,0 m
- roads : relocations and rehabilitations – 24 pcs in total length 39 599,18 m
- rest area : large left side rest area Ivachnova, proposed with full equipment/service
- noise barriers : total length 4 692,1 m
- Other planned objects: : fencing
- : retaining and revetment walls
- : treatment of land drainage systems
- : drainage, water pipeline relocations, fuel stations, oil separator ORL
- : treatment of water flows

- : relocations of air conduction lines VN, VVN
- : relocation of cable lines ST, VET, ORANGE, SSE, ŽSR
- : railway objects
- : motorway information system
- : adjustment and relocation of gas pipeline (middle pressure (STL) and high pressure gas pipeline (VTL)
- : access roads, treatment of bridges

III. CHARACTERISTICS OF AFFECTED AREA

The route of the motorway D1 Hubová – Ivachnová runs through the cadastral area of the town Ružomberok and villages of Švošov, Hubová, Likavka, Martinček, Lisková, Ivachnová a Liptovský Michal. The beginning of the section connects to the designed section of the motorway D1 Turany - Hubova in the interchange “Hubova” that will ensure connection of the road I/18 to the motorway D1. The route of the motorway touches the Velka Fatra and Chocske mountains, especially at their boundary and foothills. Steep and jagged slopes predominate, with inclinations of more than 14°. In the route of the motorway there are also milder slopes but on the other hand there are also slopes with an inclination greater than 25°. Close before Ruzom berok, perpendicular to the route, stands Cebrat hill. In the section beyond Cebrat hill from the Likavka direction, the motorway passes into Liptovska basin. The end of this section of the D1 motorway connects to the existing section of the motorway D1 Ivachnova-Hybe. The route of the motorway D1 leads mainly through agricultural land and in part also through forest and other lands. It has also to be mentioned that the route of the motorway leads through slide areas with extensive slope failures. In the design of the objects it was necessary to assure the stability of the area by reinforcing elements such as anchored pile walls, subsurface drainage of slope failures through horizontal drainage wells and surface drainage, subsoil replacement and slope shaping.

On the basis of available information, there are several mineral deposits (deposit Ružomberok III.) The project passes through the sanitary protection zone Velká Fatra which belongs to 2nd level of protective zones of water supply sources, together with water sources Staré lazy, Malko, Nová Hrboltová, Trstenica, Laukovo and Studničky, which were not divided into inner and outer parts. The D1 motorway in this section respects the runways and approach areas of the airport Ruzomberok. In certain sections the alignment of motorway transits the protective zone of national parks (NP Velká Fatra, which is 2nd level of protection) and crosses the area of European importance Váh River (SKUEV0253) in two places (4th level of protection). Other issues of interest, which may be necessary to protect according to the relevant legislative, in the affected area are not known.

IV. THE BASIC CHARACTERISTICS OF THE ENVIRONMENT

The geological construction of the territory of route D1 Hubová – Ivachnová motorway is created by rocks of Mesozoic, Paleogene, and Quaternary. In terms of the geomorphological point of view the territory belongs to the north spur of the Velká Fatra mountains and to the south spur of the Chočské vrchy mountains. This territory is formed by the two tectonic units – the Krížna and Choč thrust sheets. Both tectonic units are only represented by Mesozoic rocks. There are just small quantities Paleogene rocks. The Quaternary rocks are represented by the fluvial terrace sediments in the valley of the River Vah and diluvial and diluvial-proluvial sediments on the slopes. The territory to the east of Ruzomberok belongs to the western part of Liptovská hollow and is built mainly by Paleogene rocks of the Tatras rang. Mesozoic rocks are present to a minor extent.

According to the Slovak standards of STN 73 0036 „ Seismic load of structures“, the project is located in a seismic area with an anticipated seismic intensity 6° M.C.S..

Throughout this territory a lot of slope deformations of different type, age and developmental stage have been recorded.

The hydrogeological characteristics reflect geo-tectonic, climatic, and especially hydrological conditions. Based on geological and lithological-tectonic conditions there are:

- groundwater of mesozoic ,
- groundwater of Paleogene,
- groundwater of quaternary sediments.

In terms of general climate, the area of the subsection of the D1 motorway Hubová - tunnel Čebrať has a moderately warm climate and moderately warm, humid and mountain domain. The area of the subsection D1 Ružomberok – Ivachnová belongs to a moderately warm climate but with humid, cool or cold winter, valley domain (Atlas SSR, SAV, 1980 – Slovak Academy of Sciences). The rainfall conditions have a highly variable character in the monitored area. The average temperatures fluctuate between 4.6 to 7.5 °C, of which in the half year of summer (April - September) are between 3.9 to 17.6 °C, and in the half year of winter (October - March) are between 8.0 to 0.1 °C. The air circulation is one of the most changeable climatic elements. From the average annual frequency of turbulent winds and storms the direction of N is represented 44%, the direction of NW 30 % and the direction of W 18%.

The area of interest is located in the river-basin of the Váh, the hydrological regime of which is strongly influenced by the operation of a system of waterworks. The most important tributaries are from the left side streams: Slačianka, Štiavničanka, Revúca, Čutkovský potok, Bystrý potok, Lanový potok a Ľubochňianka. The right tributaries are streams: Teplianka, Furík, Likavka, Kamenný potok, Besná a Komjatná. The proposed route of the motorway goes through the protective zones of water supply sources Veľká Fatra and touches the common sanitary protection zone of 2nd level (PHO 2) Staré Lazy, Malko, Nová Hrboltová, Laukovo, Trstenica, Studničky. According to the hydrogeological study in April 2002, is unlikely to affect the quality of springs during construction.

Close to the affected area are the boundaries of national parks (NP) Nízke Tatry and Veľká Fatra and their protective zones.

The route of the motorway leads into areas with 1st, 2nd and 4th degree of nature or landscape protection. It passes through the northern edge of the protective zone of NP Veľká Fatra and bridges the proposed area of NATURA 2000 SKÚEV0253 River Váh with 4th degree of protection in two places. At the time of the EIA Report there was no consideration of the impact on the River Vah because it was not a NATURA 2000 site at that time, but currently the territory is subject of protection according to relevant legislation. Due to objective assessment of the interference to habitats, an inventory of habitats was performed (State Conservatory of Nature ŠOP SR Banská Bystrica, 2008), which were identified as follows.

- Ls1.1. Bottomland willow-poplar alder forests (NATURA 91E0), on some places Ls 1.3 Ash - alder alluvial forests (NATURA 6510) – priority habitats of European importance
- Ls5.4 Calcicole beech forests (NATURA 9150) - habitat of European importance
- Lk1 Lowlands and submontane mowable meadows (NATURA 6510) - habitat of European importance
- Br2 Mountain streams and herbal vegetation along its banks (NATURA 3220) - habitat of European importance
- Br6 Hygrophyllous high-stem herbs on fluvial plain from lowlands up to alpine zone (NATURA 6430) - habitat of European importance
- Tr1 Xerophytic herbaceous-grassy and shrubby vegetation on calcic subsoil (NATURA 6210) - habitat of European importance
- Ra6 Swamps with high content of bases (NATURA 7230) - habitat of European importance
- Vo4 Lowlands to mountain streams with vegetation genus (NATURA 3260) - habitat of European importance
- Lk5 Hygrophyllous high-stem herbs on fluvial plain from lowlands up to alpine zone (NATURA 6430) - habitat of European importance -
- Kr8-Willow bushes on the backwater - habitat of national importance
- Lk6 Water flooded meadows of mountain areas - habitat of national importance
- Lk 3 Mesophile pastures and grazed meadow - habitat of national importance

According to Regulation of MZP SR No.24/2003 Coll. in the assessed area the following protected species of flora are: the occurrence of a diverse population of endangered species (VU), protected by law - *Gymnadenia conopsea*, endangered and protected species *Orchis pallens*, the rare occurrence of less endangered species protected by law *Epipactis atrorubens* and the endangered species *Stipa pulcherrima* protected by law.

The territory of the River Vah with its tributaries is part of a major bird migration route and is classified as an important intercontinental bio corridor. The tree (non – forest) and bushes vegetation became a natural bio corridor for animals in these regional and local conditions. This area is considered as bio corridor of over regional significance, which includes the river Vah, and complex of mountain Veľká Fatra – Chočské vrchy. Chočské vrchy and mountain complex of Kopa – Korbeľka is considered as

bio corridor of over regional significance. The designed alignment of the motorway and the technical solution for individual structures (mostly bridges) will enable the migration of animals to take place.

V. OVERALL ASSESSMENT OF EXPECTED IMPACTS IN THE CASE OF NON IMPLEMENTATION OF THE PROPOSED ACTIVITY

Currently all traffic is led through the road I/18 that does not meet demands in terms of capacity, technical parameters and condition. It leads through the urban area of town Ruzomberok where it significantly damages the environment. The most critical place is the intersection between roads I/18 and I/59 in the direction to Banska Bystrica that currently is not able to manage forecasted traffic increases. The above mentioned facts have caused a rapid increase of traffic accidents and congestion on the mentioned roads.

In the case of non-implementation of the proposed motorway it would be necessary to minimize the impact of noise from the existing roads, which could be done by facade treatments of adjacent houses (windows replacement with noise isolating windows and installation of mechanical ventilation), where on the basis of noise measurements a higher noise level than is allowed (construction - technical measures) would be demonstrated. Because the old houses were not designed with forced mechanical interior ventilation, exceeding the noise limit would be expected in adjacent houses of the I/18 road, mainly related to the first line of houses beside the road I/18. Space for the construction of anti - noise barriers is very limited. The possibilities are limited to the fence lines of private land owners. The effectiveness of noise barriers and the appropriateness of their placement depend on their distance from the road axis and overtaking possibilities in the area of communication.

Another possible measure is to reduce the speed limit within villages (transport and organizational measures) or eliminate the accident black spots for transit traffic within the villages. Noise and air pollution generated by intensive traffic in residential areas of the local towns will be significantly reduced as a result of the diversion of a substantial portion of traffic to the new motorway (urban-transport measure).

In the context of increasing traffic intensity it is expected that in the future in the area of interest, there will be an increase of air pollution, mainly dust. Traffic will continue to go through urban areas and emissions from cars will still have negative environmental and quality of life impacts.

VI. COMPLIANCE OF THE ACTIVITY WITH THE TERRITORIAL PLAN

The proposed motorway D1 Hubová – Ivachnová is consistent with the territorial plan of the High Territorial Unit Žilina, which was approved as the Governmental Resolution no 223/1998 Coll. and its subsequent amendments.

Hubová - The Territorial plan of village - proposal (Ateliér GAM, s.r.o., Ružomberok, May 2008) together with its variations and amendments, in the area of development of superior transport infrastructure, undertakes to respect and to protect the territorial corridor in the section of D1 Martin – Ružomberok and following sections of D1, in the route of multimodal corridor Va. (core network TINA).

Švošov – The Urban Study, like a Program of renovation for the village

Ružomberok – The Territorial Plan of Residential Units - UPN SU of Ruzomberok (Ing.arch. Petrek, Ing.arch. Bišťan and team, 1995). The Territorial Plan of town Ruzomberok, variation and amendment No1 (Ing.arch. Krajč, May 2009); The New Territorial Plan of town Ružomberok – proposal (Ing.arch. Pivarčí, February 2012) – protects the territorial corridor and construction of the motorway D1 will be in the route of multimodal corridor Va. (core network TINA) in category D 26,5/120, in the route Dubna Skala - Martin - Turany - Kraľovany - Hubová - Ružomberok – Ivachnová or alternatively in route Turany - tunnel Korbeľka – Hubová, with connection on the existing section of D1.

Likavka – The Territorial plan of village Likavka – proposal (Ateliér GAM, s.r.o., Ružomberok, June 2011), in the part of public transport and technical facilities it is expected that the alignment goes through the northern cadastre of the village

Martinček – ÚPN –SU Martinček (ProArch, Ružomberok, 1999), The planned alignment of motorway D1 passes to the north of the urban cadastre of the village.

Lisková – The Territorial plan of village Lisková (Ateliér GAM, s.r.o., Ružomberok, February 2006), the planned alignment of motorway D1 passes to the north of the urban cadastre of the village.

Ivachnová – The Territorial Plan of Residential Unit Ivachnová, autor arch. Lakošтик, Enecpo Ružomberok, 1994

VII. EXPECTED IMPACT ON THE TERRITORY

The designed motorway is routed through an area where 1st, 2nd, and 4th level of protection in accordance with the Act. 543/2002 Coll. about Nature and landscape protection applies. It passes through the northern edge of the protective zone of NP Veľká Fatra and crosses in two places by bridges, the proposed area of NATURA 2000 SKÚEV0253 River Váh.

The proposed route of the motorway D1 in the section km 1,700 – 6,000 goes through the common protective zones of water supply sources of 2nd level of protection (PHO 2) Staré Lazy, Malko, Nová Hrboltová, Laukovo, Trstenica, Studničky.

The most serious effects of the activity on the environmental and measures for their reduction or elimination

Impacts on air pollution

Air pollution due to automobile traffic has a negative impact on the overall state of the environment. During the operation of the motorway part of the air pollution from traffic will move from the existing I/18 road leading through urban agglomerations to an area that has not been impacted by direct adverse impacts of transport. There will be a distribution of pollution over a larger area.

In addition to pollutants from the exhaust of vehicles there will be a contribution to air pollution from increased dustiness which is caused by turbulence on the surface of the road and its vicinity. This negative affect will be felt especially during construction.

Noise

Noise generated by intensive traffic on the road I/18 in settled areas, where levels have now exceeded allowed noise limits, will be reduced as a result of the diversion of a substantial proportion of traffic to the new motorway. At the same time the production of noise will be transferred to locations where it does not occur at the moment. According to results of the noise study based on the traffic forecast volume, this will exceed the allowed noise levels on the D1 during the day and night time in some areas, mainly in: Hrboltova, Liskova, Likavka and Ivachnova. To eliminate these identified noise levels, anti-noise barriers are proposed in sections:

- anti noise barrier on D1 km 1,790– 1,965 and km 2,700 – 2,860 (right) at Hrboltova
- anti noise barrier on D1 km 1,790 – 1,965 (left) at Hrboltova
- anti noise barrier on D1 km 6,470 – 0,145 L-B2 (left) at MÚK Likavka (interchange)
- anti noise barrier on D1 km 6,940 – 7,270 (right) at Likavka behind the interchange
- anti noise barrier on D1 km 10,230 – 11,600 (right) at Liskova
- anti noise barrier on D1 km 12,600 – 13,780 (left) at Liskova
- anti noise barrier on D1 km 14,600 – 15,600 (left) at Ivachnova

Implementation of noise barriers will ensure that the permitted noise levels in urban area of the municipalities are not exceeded.

Impacts on nature and landscape

The route of the motorway leads into area with 1st, 2nd and 4th degree of nature or landscape protection. It passes through the northern edge of the protective zone of NP Veľká Fatra, where the 2nd level of protection is applied. The construction of bridges 201 and 216 will interfere with the proposed area of NATURA 2000 SKÚEV0253 River Váh .

Impacts on biota most notably take effect during the construction in open country, namely:

- direct liquidation of habitats
- interference and influencing functions of habitats (modification of surface streams)
- creating, respectively strengthening, barrier effects in migration corridors

- impacts of noise, emissions and grit on habitats nearby the motorway

Construction of the project requires necessary cutting of trees and woody plants in the route of the motorway. River bank vegetation will be removed only to the extent necessary in the width of the motorway and its protective zone and in the space of adjustment of water streams. The route of the motorway will destroy the following habitats of European and national importance:

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According to the comments from the ŠOP SR (*State Nature Conservancy*) dated on 30.11.2006 there is a system of springs with recent formations of a calcareous tufa around km 2,830. The springs represents the priority habitat of European importance Pr3 Petrifying springs with tufa formation (Cratoneurion) (7220). Several protected plant and animal species are dependant on this habitat. There is stated in the statement of the designer (working meeting on 15.05.2007), that it is only proposed to adjust the existing creek and the surrounding area will not be affected by construction. The bridge over the valley will only be constructed in the route of motorway. At the same time the future contractor is committed in the specific technical conditions to only move construction equipment within the extent of permanently occupied land.

The interference to the habitats of European or national importance must be approved by the relevant district office of environment and financial compensation has to be paid in the form of the social value of liquidation or disturbance of habitats, which provides income for the Environmental Fund.

With regard to the territory of European importance SKÚEV0253 River Váh, inquiry proceedings were undertaken on the influence of planned activities (construction of the motorway D1 Hubová - Ivachnová) on the sites of NATURA 2000 (ŠOP SR Banská Bystrica, 2008). In the sections km 0.411 to 0.849 (bridge 201 on D1) and km 12.309 to 12.910 (bridge 216 on D1 above railway track, regional road III/018104 and river Váh) the area of habitats 3260, 3220, will be reduced by a small area. Due to increasing of pollution during the operation deterioration of habitats (cumulating of toxins) can be expected along the corridor of the motorway. In terms of animal species the area of habitats and cover for animals will be reduced. During the construction of the bridge piers directly in the water flow, there will be a temporary effect on aquatic animals occurring due to contamination by the flushing of soil and wind-blown dust. There is a risk of danger to ichthyofauna and aquatic animals, and indirectly semiaquatic animals which can occur in the case of emergency situations which temporarily deteriorate the quality of water. The mortality of bats can increase due bridging the water flows resulting in their collisions with vehicles.

The nature protection authority did not consider these effects as significantly adverse, because interference with habitats during the construction of bridges will be minimal and the specified habitats are able to naturally recover. The damage to the habitats of animal species during the construction of

bridges will be only temporary and impacts of both bridges will be minimal on fish and other aquatic animals. It is expected that the bridge barriers will cause only a moderate mortality of bats.

Impacts on surface and groundwater.

The construction and operation of the motorway could affect the quality of surface and groundwater and their related water management. From a qualitative point of view the most likely possibility of contamination by oil is caused by accidents or defects in construction equipment. There is also a risk of erosion of the soil into the beds of affected streams, with increasing turbidity, which may cause adverse changes of water flow, and negative possible impacts of surface water, related to their accessibility, resulting with an increased possibility of direct contamination during the construction or operational phases. Generally the most vulnerable are the flows of small surface streams, especially during the construction phase.

The degree of vulnerability of surface water depends on permeability and thickness of sub-base, hydrogeological characteristics, the position of water collectors, and groundwater levels. A higher measure of permeability of water collector generally creates better conditions for relatively rapid migration of contaminants through groundwater flows. In emergency situations and inadequate treatment of the surface, there is a risk of degradation of water quality due to the cumulative effects. Threats and vulnerability of surface water is tied mostly to the sections, where the new road respectively approaches and crosses the surface flows.

A potential risk is also presented by the plant depot and site installations (leak of wastewater and the presence of contaminants in ground water).

The proposed route in the subsection of the tunnel leads through the common sanitary protection zone of 2nd level (PHO 2) VZ Staré Lazy, Malko, Nová Hrboltová, Laukovo, Trstenica and Studničky. The hydrogeological study was prepared in order to assess the impacts on the water quality in springs during the construction and operation of the motorway. In its conclusion is stated, that based on the current state of knowledge of the geological and hydrogeological conditions, resulting only from the indicative survey, there is a high probability that tunnel construction will not have an impact on the springs Pr3 and Pr4 (VZ Staré Lazy). But to definitely exclude the possibility of a partial effect is not possible. The possible impact on the utilised water supply resources incurred by the excavation of tunnel Čebrať will be specified on the basis of the detailed hydrogeological survey in the next stage of the project documentation. Other sources are located on the southern slope of the massif Čebrať and are located further away from the route of the tunnel. The water source Malko is 600 m away and source Studničky about 1600 m away. It is expected that these springs are tied on deeper circulation originating in the rock complex Choč and therefore it is unlikely that the tunnel excavation will have an impact on these water sources.

Rainwater from road drains will be led into oil separators and from there will be discharged into the recipient water bodies. Oil separators will collect and treat rainwater from the motorway. Construction and function of oil separators must comply with Standard STN EN 858-1 and 858-2.

Impacts on mineral and soil environment

The dominant effects of motorway construction on the mineral environment can be classified :

- construction of tunnel Čebrať (drilling and excavating)
- disruption of slope stability caused by earthworks and activating landslides
- erosion and weathering
- extraction of raw materials needed for the construction of a motorway
- storage of building material from the cuttings

The rock (mineral) environment influences the implementation activities and methodology, especially in the cutting areas and sections sensitive to landslides. Throughout this territory a lot of slope deformations of different type, age and developmental stage have been recorded. The soil body will be partially excavated in cuts and partly built on embankment. The stability of the cuts with depth more than 5m is ensured by slope benching. Due to the high sensitivity of occurring rocks to weathering effects, it will be necessary to protect cutting sections deeper then 5m with antifreeze layer of material. All embankments higher than 5m will be built by sandwich construction. It is necessary to accelerate consolidation with suitable soil with drainage properties - by alternating the appropriate layers with good drainage properties. The appropriate material for embankments will be obtained from the excavation of the tunnel Čebrať. However there is a lack of appropriate material for embankments and part of the material will be imported from a borrow pit. The soil should be used if its characteristics will assure the slope stability requirements according to standards STN 73 3050 a STN 72 1002. Tunnel

Čebrať consists of two tunnel tubes: southern tube and northern tube that in basic mode will each be operated as one-way. Both tunnel tubes are divided into sections constructed by drilling and both portals constructed in open excavations that will be subsequently be backfilled. The finally adopted cyclical method of boring with blasting and mechanical breaking will be based on the length of the tunnel and the conditions of the rock massif. Construction technology has an influence on the tunnel structure which utilises a double-skin lining of non-circular shape.

The implementation of the motorway will result in the occupation of agriculture and forest land, and areas of grassy vegetation. It will disrupt the organization of land (the distribution of plots, interruption of existing farm tracks etc.), may influence soil erosion and result in the contamination of soils and agricultural lands along the motorway. The protection of agricultural land (PPF) during construction is necessary to minimize the occupation of land, encroachment of plant depots and sites for the temporary of dumping of materials. Protection against contamination of soil caused by construction equipment is only possible by ensuring proper maintenance of the equipment. The plant depots need to be situated on paved surfaces. The basic measure to protect agricultural lands is to remove topsoil or agricultural soil according to the Methodical instruction of the Ministry of Agriculture no. 2341/2006-910.

VIII. COMPENSATION MEASURES

Compensation measures are introduced to offset any damage suffered, mostly to property and economical and environmental damage.

in social impact assessment :

During construction of the D1 motorway, the close cooperation between investors, contractors and the affected municipalities is anticipated in order to minimize the effects of motorway construction on villages and their populations. Agreement will be needed to ensure approval, particularly in determining of the traffic route, traffic regime, the method of local road maintenance (cleaning, spraying to reduce dust) and subsequent repair of damaged sections from the passing of heavy machinery. In determining the traffic route, agreement will be needed to ensure travelling speed and road safety (speed limit, entrance etc.) and to ensure the mitigation of negative impacts on quality of life on the affected population (elimination of the heavy traffic close to homes at night, on holidays, etc.)

A sensitive area is the property losses of the affected population. Mitigation of this impact can only be performed by adequate compensation for losses to the satisfaction of the population in accordance to valid legislation (Regulation of Ministry of Justice no. 492/2004 Coll about determining the value of property), individually in close cooperation with investor, affected people, and city or municipal council.

for occupation of agricultural land

Compensatory measures concern the occupied land resulting from the relevant legislation, namely the Act. 220/2004 Coll on the Protection and use of agricultural land and from the amending Act. 245/2003 Coll concerning integrated prevention and control of environmental pollution, respectively. Law no. 219/2008 Coll, amending and supplementing Law no. 220/2004 Coll.

for occupation of forest land

Compensatory measures concerning the forest resulting from the relevant legislative provisions, namely in accordance with the Act no. 363/2005 Coll. about the forest and amending certain laws

for cutting of wood plants growing outside of forest

Compensatory measures for cutting of trees / wood plants shall be resolved in accordance with the Act no. 543/2002 Coll of nature and landscape protection and with executing Edict of the MoE SR no. 24/2003 Coll, which determines the social value of plants (resp. pursuant to Edict no. 579/2008 Coll , which amends the Edict of MoE SR 24/2003 Coll.) The Nature protection authority (municipality) will specify the conditions for cutting of trees / wood plants and compensation in the form of replacement planting or financial social value of the liquidated wood plants.

for damage, respectively. destroying of habitats

The interference to habitats of European or national importance must be approved by the relevant district office of environment. The District Environmental Office in Ruzomberok issued the decision (OP 2008/1463-7), based on which financial compensation in the form of social value of habitats was paid, which provides income for the Environmental Fund. The State Conservatory of Nature (ŠOP), Administration of TANAP did not submit any documentation which required appropriate revitalisation measures; the nature protection authority ordered just the financial compensation without other conditions. The overall value paid to the Environmental fund is 94.753 552,- Sk, i.e., 3.145 241,72 EUR. The Ministry of Environment permitted an exemption for the protection of species and allowed the interference to the habitat of the protected species (Gymnadenia conopsea, Orchis pallens, Epipactis atrorubens Stipa pulcherrima)

IX. COMPARISON OF VARIANTS

The beginning of the section D1 Hubová – Ivachnová is in the grade-separated interchange "Hubová" that will ensure connection of all directions. The project contains tunnel "Čebrať" of length app.2km, leading under the mountain massif of the same name and will form a northern bypass of Ruzomberok. The connection to the road I/59 is provided by interchange „Likavka“, located at km app.6,000 of D1 motorway, to north of the village Likavka. At the end of the section the motorway route is continuously connected to the existing motorway section near Ivachnova village. This junction also provides a connection with the existing road I/18 to the motorway D1 from the direction of Ruzomberok. Beyond the end of the designed section of the D1, on the left, is designed rest area Ivachnova. Its location is determined by natural conditions and surrounding scenery. The respective rest area completes an existing rest area on the right, providing a large two-way rest area Ivachnova. The total length of the proposed project D1 Hubová – Ivachnová is **15,272 48 km**.

Differences between variants recommended by the Final Statement of MoE and the designed solution are caused by the changes of the alignment of the motorway. Compared solutions in the EIA with documentation for the building permit are:

- in km 0,000 – 1,700 the alignment of motorway was shifted to the north app. 21m, thereby improving the overtaking conditions, and the crossing angle with road I/18 and the railway track was increased resulting in the shortening of the bridge structure 201
- in km 1,700 – 6,000 due to the geological and morphological conditions of the area the alignment of the motorway was adjusted about 45 m to the south
- The position of the western and eastern portals of tunnel Čebrať were changed by about 30m towards the south due to results from the geological survey (IGP) and the location of the interchange Likavka. The amount of remediation measures were reduced, especially at the west portal of the tunnel
- in km 6,000 – 7,100 the route of motorway was shifted about 50m to the south out of the residential area near motorest Hubertus
- in km 7,600 – 10,200 the route of motorway was shifted about 90m to the north, to improve transport travelling speed and road safety and also to increase the distance from the urban area of village Martinček
- in km 11,000 – 14,500 the alignment of motorway was shifted about 90 m to the north respecting the runways and approach areas of the airport Ruzomberok and planned construction of a small hydro power plant (MVE) Ivachnová towards the edge of nature reserve PR Ivachnovský Luh

All changes were developed during the preparation of project documentation as a result of optimization based on the comments of representatives of the affected municipalities, institutions and expert organizations, authorized to comment on the technical solutions of the proposed construction. The changes to the alignment of the motorway have resulted in modification of the detailed solutions of bridges, road relocations and reconstruction, relocations and adjustments of water flows, utilities relocations, and to the extent of anti-noise measures.

The designed motorway follows the corridor of the variants recommended in the Final Statement of MoE dated 24.09.1997. The changes to the proposed motorway therefore do not mean the change of principle solutions. The most significant changes are a modification of motorway alignment, location of the portals of the tunnel Čebrať, elimination of remediation measures during the construction of tunnel Čebrať, shifting of the alignment of motorway out of the urban areas, relocations and adjustments of

water flows and increase of the extent of anti-noise measures. The noise load on the population was underestimated in the original assessed solution. The change of the proposed activity will increase the extent of anti-noise barriers (about 2 851m). Compared with the recommended variant from the EIA process, the impacts on the population and the environment are more favourable in the proposed adjustment variant.

In terms of overall occupied land required for the construction of the motorway D1 it has to be noted that the designed project compared with the recommended variant occupies a comparable permanent area of land.

Emission load from the transport was calculated in the EIA Report for different traffic intensities and for different time horizons in accordance with the then applicable regulations. An updated emissions study was not elaborated for the proposed changes at the time of the processing of the DSP, but monitoring of air pollution based on the conditions from Final Statement of MoE was proposed.

Compared with the EIA Report during the development of DUR and DSP, documentation was updated for a range of noise measures according to the Noise study, where the impacts of traffic on existing urban areas were evaluated, after putting the D1 motorway into operation. At the time of the processing of DSP, the Regulation of Ministry of Health of the Slovak Republic, on 10th May no. 339/2006, laying down the details on permitted values of noise, infrasound and vibration and about requirements on objective assessment of noise, infrasound and vibration in the environment was applied. Under this regulation the noise study and its results were used in the design of noise walls and facade adjustments.

The range of noise barriers was increased from 1 841 m (EIA Report) to 2 350 m (DUR) up to 4 692,1m (DSP). In section Hubová – Ivachnová, 8 noise barriers on the motorway D1 in the total length of 4 692,1m were proposed. Based on the requirements of the District Environment Office (OUŽP) at section km 12.600 to 13.380 (Ivachnová) a noise ornithological barrier 4(four) metres high with reflection parts (e.g. silver paint bands) was proposed. The reason is security of birds in this area. It is also necessary to construct a new noise barrier in connection with the existing section in the locality Ivachnová.

In the EIA Report the following anti noise measures (PHS) were proposed:

- concrete railing at km 6.740 to 6.920 on the right side, to protect residential area Hrboltová
- noise barrier at km 15.080 to 15.300, on the right side on retaining wall to protect farm buildings RD Lisková
- noise barrier at km 18.723 to 19.433 on the left side, to protect urban area of the village Ivachnová.

In addition in this section of the D1 motorway the drainage asphalt surface was proposed.

In the DSP the following anti noise measures were proposed:

- anti noise barrier on D1 km 1,790– 1,965 and km 2,700 – 2,860 (right) at Hrboltova
- anti noise barrier on D1 km 1,790 – 1,965 (left) at Hrboltova
- anti noise barrier on D1 km 6,470 – 0,145 L-B2 (left) at MÚK Likavka (interchange)
- anti noise barrier on D1 km 6,940 – 7,270 (right) at Likavka behind the interchange
- anti noise barrier on D1 km 10,230 – 11,600 (right) at Liskova
- anti noise barrier on D1 km 12,600 – 13,780 (left) at Liskova
- anti noise barrier on D1 km 14,600 – 15,600 (left) at Ivachnova

The proposed technical measures will ensure compliance with the requirements of the Regulation of the Ministry of Health (MZ SR).

In the EIA Report interference with water flows in each of the proposed options was considered, but its extent was not quantified. The designed changes will require interventions with water flows in the affected area in the following range: adjustment of unnamed creek at km 2,830 in total length 105m, adjustment of unnamed creek at km 6,100 – 6,167 in total length 376 m, adjustment of Likavka creek in total length 315 m, adjustment of unnamed creek at km 7,340 in total length 63m. During the construction phase some qualitative changes are expected (turbidity of water, removal of riverbank vegetation, etc.). These changes will only have a temporary effect.

The project passes through the sanitary protection zone Velká Fatra belongs to 2nd level of protective zones of water supply sources together with water sources Staré lazy, Malko, Nová Hrboltová,

Trstenica, Laukovo and Studničky. The hydrogeological study was elaborated due to assessing the impacts on the water quality of springs during the construction and operation of the motorway, in which it is stated, that there is a high probability that tunnel construction will not have an impact on the springs Pr3 and Pr4 (VZ Staré Lazy). But to definitely exclude the possibility of partial effect is not possible. Other sources are located further away from the route of the tunnel. It is unlikely that implementation of the project will have an impact on qualitative or quantitative properties of water sources.

The recommended variant and proposed modifications are located in areas where 1st, 2nd, and 4th level of protection in accordance with the relevant valid legislation applies. At the time of the EIA (in 1996) there was no consideration of the impact of the NATURA 2000 sites. Construction activities will directly affect the sites of European importance SKÚEV0253 River Váh (cadastry Hubová, Hrboltová km 0,441-0,849 and in cadastry Lisková, Ivachnová km 12,309-12,910). The construction of bridges will reduce the area of habitats, which represent only a small area in these sections. The negative impacts during the construction of bridges will be minimal and the specified habitats are able to naturally recover. Other protected areas in accordance with the act on the protection on nature, the sites of European importance and special protection bird areas are away from construction activities associated with implementation of the proposed project.

In the EIA Report there was no quantification of interference with each habitat. The proposed modification was performed in accordance with the amended legislation inventories of habitats of European and national importance (ŠOP SR, Banská Bystrica, 2008), which were identified as follows:

- Ls 1.1. Bottomland willow-poplar alder forests (NATURA 91E0), on some places Ls 1.3 Ash - alder alluvial forests (NATURA 6510) – priority habitats of European importance, on a total area of 13 249 m²
- Ls5.4 Calcicole beech forests NATURA 9150 - habitat of European importance on a total area of 25 274 m²
- Lk1 Lowlands and submontane mowable meadows (NATURA 6510) - habitat of European importance on a total area of 84 712 m²
- Br2 Mountain streams and herbal vegetation along its banks (NATURA 3220) - habitat of European importance on a total area of 123 m²
- Br6 Hygrophyllous high-stem herbs on fluvial plain from lowlands up to alpine zone (NATURA 6430) - habitat of European importance on a total area of 293 m²
- Tr1 Xerophytic herbaceous-grassy and shrubby vegetation on calcic subsoil (NATURA 6210) - habitat of European importance on a total area of 18 444 m²
- Ra6 Swamps with high content of bases (NATURA 7230) - habitat of European importance on a total area of 143 m²
- Vo4 Lowlands to mountain streams with vegetation genus (NATURA 3260) - habitat of European importance on a total area of 535 m²
- Lk5 Hygrophyllous high-stem herbs on fluvial plain from lowlands up to alpine zone (NATURA 6430) - habitat of European importance - on a total area of 34 m²
- Kr8-Willow bushes on the backwater - habitat of national importance on a total area of 9 778 m²
- Lk6 Water flooded meadows of mountain areas - habitat of national importance on a total area of 1 117 m²
- Lk 3 Mesophile pastures and grazed meadow - habitat of national importance on a total area of 683 m²

Based on the inventory of habitats of European and national importance, the value for compensation of destroyed habitat was 94.753 552 - Sk, which is 3.145 241,72 €.

In the EIA Report there was no quantification of cutting of trees. Under the Act no. 543/2001 Coll. and based on the performed inventory of plants growing outside of forests and on the route of the designed motorway D1, the calculated overall social value of the cutting of trees amounted to 42.846 715, - Sk, which is 1.422 250,38 €, and which has been paid to the affected municipalities.

Modifications of the proposed activity can be assessed positively, because it will improve the traffic situation in the area and will significantly increase traffic safety and impact on the population. The most positive impacts will be felt by residents of municipalities, through which all transit traffic currently

passes. Implementation of vegetation adjustment incorporates this technical structure into the country, which will positively influence the image of landscape of this area.

Air pollution and noise due to automobile traffic has an indirect negative impact on population during the operation of the project. Construction of noise barriers will ensure that noise limits are not exceeded. Waste management during the operation will be ensured by the administrator of the motorway in collaboration with operators of recovery and disposal of waste on a contract basis.

The project will be implemented on the basis of the building permit. All conditions for implementation have been taken into account to meet all applicable legislative provisions aimed at eliminating negative effects on the population.