



**PROJECT PROPONENT:** HRVATSKE AUTOCESTE D.O.O., Republic of Croatia

**TYPE OF PROPOSED ACTIVITY:** Construction of A5 Motorway (Corridor Vc), sections Hungarian Border- Beli Manastir and Beli Manastir - Osijek

**NOTIFICATION TO HUNGARY AS AN AFFECTED PARTY OF A PROPOSED  
ACTIVITY UNDER ARTICLE 3 OF ESPOO CONVENTION**

Zagreb, Republic of Croatia, July 2016



Table 1  
NOTIFICATION TO AN AFFECTED PARTY OF A PROPOSED ACTIVITY UNDER ARTICLE 3 OF THE CONVENTION

1. INFORMATION ON THE PROPOSED ACTIVITY

(i) Information on the nature of the proposed activity

Type of activity proposed

- Construction of motorways.

Is the proposed activity listed in Appendix I to the Convention?

- Yes.

Scope of proposed activity (e.g. main activity and any/all peripheral activities requiring assessment)

The main activity in proposed project consists of construction of the part of motorway A5, in total length of 29+586.67 km.

The motorway is constructed with two carriageways, separated by a median strip on the motorway, which consists of two lanes and one emergency lane.

For the reason of crossing the existing channels and watercourses, and other transport infrastructure corridors, structures are planned on the entire motorway either on or above the motorway route. Other planned structures are the motorway junctions Beli Manastir and Čeminac with toll payment and connecting roads with the existing traffic network.

Other structures within the motorway are the Frontal Toll Station Sudaraš and two roadside service facilities Beli Manastir (C+C), and Osijek (type A - one sided).

Except for parts of the planned activity that were already mentioned, the planned activity also includes other built objects and construction works, such as construction and/or relocation of roads/pathways, and relocation and protection of existing and planned installations.

Scale of proposed activity (e.g. size, production capacity, etc.)

The proposed activity has been planned through construction projects, which are individually made for each of the two motorway sections. The total length of the planned motorway amounts to 29+586.67 km, of which 5km is the length of section I., and 24+586.67km is the length of section II.

The planned motorway is almost entirely located in the Baranja region, only the final part of the section II, after the crossing of Drava River, runs through Slavonia region.

The section I. named Hungarian border - Beli Manastir starts from the state border with Hungary, runs along the state border for approximately 2 kilometres and continues around the west side of the Town of Beli Manastir where it ends and the section II Beli Manastir - Osijek continues.

After section I., section II. continues, starting at km 5+000, runs to the west side of the Town of Beli Manastir, with the first junction, after which it continues through mostly unpopulated, agricultural land up to the settlement Jagodnjak (km 13+780). Čeminac Junction is located (km 15+680) in continuation along the motorway route, and further on the motorway route again continues through agricultural land until the Drava flood retention area. The motorway crosses the entire flood retention area over the Drava Bridge (l = 2485.05), after which it continues in Slavonia region, between the two suburban settlements Petrijevcı and Josipovac, near where the planned motorway ends at the meeting point with the existing part of the A5 Motorway, section III Osijek - Đakovo.

### **Description of proposed activity (e.g. technology used)**

#### **General**

The motorway A5 Beli Manastir (Croatian border) - Osijek - Svilaj is a part of the international Pan-European motorway corridor Vc and one of the most important branches of the TEM/TER Project.

The section Hungarian Border - Beli Manastir starts at km 0+000.00, and ends at km 5+000.00. The section Beli Manastir - Osijek starts at km 5+000.00, and ends at km 29+793.36, and its overall length amounts to 24.589 km.

This road route in the Croatian traffic network represents the backbone of the east part of the State, connecting the Osijek-Baranja County to the Corridor X, i.e. the Zagreb - Lipovac Motorway. The planned motorway contributes to the economic development of the regions it passes through, in addition to offering a faster, better and more pleasant travel conditions between the eastern part of the country and the capital. The priority of the Physical Planning Program of Croatia (OG 50/99) and the Traffic Development Strategy of Croatia is the motorway construction and its corridor has been confirmed as a European traffic corridor.

The end of the section Beli Manastir-Osijek is at the same time the beginning of the section in continuation i.e. the section Osijek-Đakovo, which has been fully completed and for which the operating permit was issued, and it is open to traffic from Osijek Interchange to the end of section Osijek-Đakovo.

It is emphasised that, based on the existing design documentation, the interstate commission of the Republic of Croatia and Hungary defined the position of the starting point of the section Hungarian Border- Beli Manastir at km 0+000.00 and it was fixed on the site.

#### **Project phases**

The construction of the concerned project is planned in two phases:

- **Phase I.** assumes the construction of a part of the right carriageway of the entire future section of the motorway Hungarian Border -Beli Manastir from km 0+000.00 to the end of section at 5+000.00 km and a part of the right carriageway of the section Beli Manastir - Osijek from its beginning at km 5+000.00 to km 22+400.00.

On the part of the section Beli Manastir-Osijek, from km 22+400.00 to the already constructed Drava Bridge, a full motorway profile is planned to be constructed, and the same is true of the part behind the constructed Drava Bridge to the end of the section at km 29+589.67, which is currently under construction, which would achieve the connection to the already completed section Osijek-Đakovo. The mentioned part of the right carriageway consists of two traffic lanes (2x3.50 m) and it is planned for two-way traffic. Due to geomechanical conditions of foundation work, for all structures on the route of length 31.0 m or greater, except for Halasica Bridge, which will be constructed in full motorway profile, on the part where only a part of the right carriageway will be constructed in the first phase, joint abutments will be constructed for the left and right structures and the entire right structure (only for the entire right carriageway), wherein it is also planned to execute the embankment of length ca. 40-50 m, along each abutment of the future left carriageway. Smaller structures of 7.1 m in length will in the first phase be executed only for the right carriageway (right structure). Within construction of phase 1, the construction of Beli Manastir Interchange, Frontal Toll Station Sudaraš, the Roadside Service Facilities Beli Manastir and crossings has been planned.

- **Phase II** assumes the extension to full motorway profile of the entire section Hungarian Border - Beli Manastir from km 0+000.00 to km 5+000.00 and the part of the section Beli Manastir-Osijek from its beginning at km 5+000.00 to km 22+400.00. The extension to a full profile involves the construction of the right carriageway (extension of the traffic and overtaking lane to the width 2 x 3.75 m (marginal strip and emergency lane), and the construction of the entire left carriageway (traffic, overtaking, emergency lanes and marginal strips).

## **Main route**

### **From km 0+000.00 to km 5+000.00**

The section of the motorway Hungarian Border - Beli Manastir carries the designation 1, and it is 5,000.00 m in length. The section begins at km 0+000.00 on the border between the Republic of Croatia and Hungary. The concerned section ends at km 5+000.00, which is at the same time the beginning of the section Beli Manastir - Osijek that follows in continuation.

The motorway has been designed with two carriageways separated by the median strip, each with two traffic lanes and one emergency lane.

All technical elements of the motorway have been defined according to the Terms of Reference and the ordinances for the specific category and significance of the concerned motorway, for the design speed  $V_p = 130$  km/h.

All intersections with the existing transport network were solved as grade separated.

The basic carriageway width on bridges and viaducts is the same as on the remaining part of the route.

Due to intersections with the existing channels and watercourses, and the railway line, a number of road structures has been planned on the route. The largest structure is the Karašica Viaduct across the railway line and the Karašica channel of 294 m in length, including two shorter structures up to 10 m in length.

Due to the mentioned spatial limitations, the motorway grade line is mostly on embankment.

#### **From km 5+000.00 to km 29+589.67**

The total length of the section Beli Manastir - Osijek amounts to 24589.67 m.

The motorway has been designed with two carriageways, separated by the median strip, and with two traffic lanes and one emergency lane each.

All technical elements of the motorway have been defined according to the Terms of Reference and the ordinances for the specific category and significance of the concerned motorway, for the design speed  $V_p = 130$  km/h.

The beginning of the entire section is 5 km south of the Croatian-Hungarian border, near the intersection with the D517 state road to Beli Manastir. The route stretches to the south passing west of Beli Manastir, towards Jagodnjak, which it bypasses to the east, near Novi Čeminac. It reaches the Drava River and crosses it by a bridge across the dike on the Baranja side, the left flood retention area, the Drava riverbed itself and the right flood retention area with the river Vučica. It reaches the D34 state road between Josipovac and Petrijevci, which rises above the motorway according to this design. In continuation it reaches the R202 railway line (Varaždin-Koprivnica-Virovitica-Osijek-Dalj), crosses it via the long Josipovac Viaduct, after which the section ends, right before the Osijek Interchange.

The route is extremely flat, and the sequence of plan view elements confirms its straightness (radii of plan view curves are greater than 4000 m).

All intersections with the existing transport network have been designed as grade separated, and its connections to the motorway are possible only at interchanges. The Beli Manastir Interchange is planned on this section, which will be connected to the State Road D517 and Čeminac Interchange, which is connected to the county road Ž4054 near Novi Čeminac by link road, and in the future it will be connected to the future D212 Beli Manastir-Batina (Border of the Republic of Serbia). The interchanges will be of the trumpet type. There are no interchanges on the previous border section, while Osijek Interchange is located immediately after the end of the concerned section and at the beginning of the section Osijek-Đakovo.

The interchange for RSF Osijek is not used for the connection with the existing traffic network, but only for access to RSF Osijek.

Due to the mentioned spatial limitations, the motorway grade line is mostly on embankment.

## **Road Structures**

### **Overview of road structures and structures crossing over the road**

#### **From km 0+000.00 to km 5+000.00**

##### *Road structures*

The following road structures will be constructed in the project area:

1. *Travnik Drainage Channel Bridge*, km 0+165.00; L=7.1 m
2. *Karašica Viaduct*, km 2+976.00; L=294 m (28.0+7x34.0+28.0)
3. *3rd Category Channel Bridge - K-95a*, km 3+543.00; L=7.1 m

#### *Structures crossing over the route*

The following overpasses have been planned in the project area:

1. *Gajić Overpass*, km 1+026.24 (agricultural crossing)
2. *Branjin Vrh Overpass*, km 1+932.22 (agricultural crossing)
3. *Rašće Overpass*, km 3+746.04 (local road L44006 crossing)

#### **From km 5+000.00 to km 29+589.67**

#### *Road structures*

The following structures are located on the concerned section:

1. *Karašica Drainage Channel Bridge*, km 5+318.20; L=31 m (9.5+12+9.5 m)
2. *Bojana Bridge*, km 6+446.19; L=31 m (9.5+12+9.5 m)
3. *Sudaraš Bridge*, km 8+051.67; L=7.1 m
4. *Haljevo 1 Wildlife Crossing*, km 10+572.00; L=31 m (9.5+12+9.5 m)
5. *MK VI/0 Bridge*, km 11+000.00; L=7.1 m
6. *Haljevo 2 Wildlife Crossing*, km 14+588.60; L=31 m (9.5+12.0+9.5 m)
7. *Stara Barbara Bridge and Wildlife Crossing*, km 18+875.50, L=31 m (9.5+12.0+9.5 m)
8. *Barbara Bridge*, km 20+504.28; L=31 m (9.5+12.0+9.5 m)
9. *Ćirina Ada Bridge and Wildlife Crossing*, km 20+792.77; L=31 m (9.5+12.0+9.5 m),
10. *Halasica Bridge*, km 22+480.00, L=31 m (9.5+12.0+9.5 m)
11. *Bridge across the Drava River*, km 24+550.84; L=2485.05 m
12. *Josipovac Viaduct*, km 29+055.43; L=294 m (28.0+7x34.0+28.0)
13. *Vučica Bridge on the agricultural road across the deviation of Vučica River*  
L=41.6 m (12.8+16+12.8 m); š<sub>uk</sub>=5.6 m

#### *Structures crossing over the route*

The following road crossings with pertaining structures have been planned in the project area:

1. *Adica Overpass on the deviation of D517*, km 5+590.45
2. *Overpass at Beli Manastir Interchange*, km 5+860.01
3. *Sudaraš Overpass*, km 7+650.00 (agricultural crossing)
4. *Bolman Overpass*, km 11+050.00 (agricultural crossing)
5. *Jagodnjak Overpass*, km 13+780.00 (agricultural crossing)
6. *Overpass at Čeminac Interchange*, km 15+680.00
7. *Krčevine Overpass*, km 16+150.00 (crossing Ž4041)
8. *Uglješ Overpass*, km 17+040.00 (agricultural crossing)
9. *Mali Jagodnjak Overpass*, km 20+260.00 (agricultural crossing)
10. *Bezdan Overpass*, km 22+130.00 (agricultural crossing)
11. *Overpass for RSF Osijek*, km 26+900.00
12. *Petrijevci Overpass*, km 27+500.00 (crossing D34)
13. *Jarak Overpass*, km 28+320.00 (agricultural crossing)

## Drainage and water protection

### From km 0+000.00 to km 5+000.00

#### *Internal drainage*

The section in question runs across areas with free drainage and the well field areas under a stricter protection regime.

#### *Free Drainage*

On the motorway section Hungarian Border - Beli Manastir the drainage of collected storm water is solved in this way from km 0+000.00 to km 2+912.78, where the highest point of the Karašica overpass grade line is located and from where water flows down in the direction of the beginning of the section and into the free drainage zone.

#### *Areas Subject to Stricter Protection Regime*

On the section from km 3+000.00 to km 5+000.00 the motorway runs across the protection area of the Livade well field. Since the road runs through the third (III) zone of sanitary protection of the well field, the protection measures are defined in compliance with the Ordinance on Determination of Sanitary Protection Zones (OG 55/02, 66/11, 47/13).

In this area the section is on embankment for the most part and on the Karašica Viaduct, which ends at the border of the Livade well field; therefore the water which flows down from the highest point of the structure at km 2+912.78 towards the well field zone is treated under a stricter regime.

#### *External drainage*

The external drainage through perimeter road channels-ditches is designed along the road, the main route and the crossing across the motorway, led on the embankment, on both sides of the road embankment, at the approximate distance of 4 m from the embankment toe.

### From km 5+000.00 to km 29+589.67

#### *Internal drainage*

Taking into account the terrain properties, geological and geomechanical properties, and the thickness of cover layers, an open drainage system has been proposed by the design for the major part of this section, and a closed drainage system for a smaller part of the section with controlled water discharge, via separators, and partly via a lagoon up to the receiving water body, depending on the zone of protection that the motorway passes through.

#### *Free Drainage*

On the section of Beli Manastir - Osijek Motorway, the drainage of collected storm water has been solved in the mentioned way, from km 9+750.00 to km 22+545.00 and from km 26+580 to km 27+440.

#### *Areas Subject to More Lenient Protection Regime*

On the section of Beli Manastir-Osijek Motorway, the drainage of collected storm water is solved in the mentioned way from km 22+545 to km 26+580, in order to protect the Drava River and its flood retention area, as well as of the river well field Pampas, which is located several kilometres downstream, which belongs to the water supply system of the City of Osijek.



### *Areas Subject to Stricter Protection Regime*

From km 5+000.00 to km 9+750.00, the motorway passes through protection zone III of the Livade well field, and from km 27+440.00 to km 29+589.67, the motorway passes through protection zone III of the Vinogradi well field, which belongs to the water supply system of the City of Osijek.

Since the road runs through the third (III) zone of sanitary protection of the well field on the concerned sections, the protection measures have been defined in compliance with the Ordinance on the conditions for establishing sanitary protection zones for springs (OG 55/02, 66/11, 47/13).

### *External drainage*

The concerned section crosses over numerous watercourses, irrigation channels, rivers, on which larger or smaller road structures or culverts are planned, and some of them will need to be regulated.

### **Interchanges and link roads**

The interchanges Beli Manastir, at km 5+860.00 and Čeminac at km 15+680.00 with the link road to the county road Ž4054, as well as the interchange for exit to the RSF Osijek at km 27+320.00 have been designed on the concerned section. All the interchanges are of trumpet type.

### **Toll collection facilities**

Toll collection facilities have been planned on the concerned section, at the following locations:

- FTS Sudaraš - frontal toll station at km 7+000.00
- TS Čeminac - as a part of Čeminac Interchange at km 15+680.00

### **Roadside service facilities (RSF)**

Two roadside service facilities were designed on this section, Beli Manastir (type C+C) and Osijek (type A), which is exceptionally located on one side of the road only.

RSF Beli Manastir-East at km 6+800.00 is located right before the FTS Sudaraš, and Beli Manastir-West at km 7+200.00 right after FTS Sudaraš, both next to the main route.

RSF Osijek (type A) is located next to the left (east) side of the motorway, near Karašica River and Drava groves. RSF Osijek will be used for both traffic directions, due to which the connection is planned via a grade-separated interchange - of trumpet type at km 27+320.00.

### **Description of purpose of proposed activity**

The primary purpose of the planned motorway construction is to finish the Croatian part of the motorway in Corridor Vc, via connection with A5 Motorway on one side, which is already partly built, and to connect with the Hungarian motorway at the state border on the other side.

With these last two unbuilt sections of the Croatian A5 Motorway, which are the subject of proposed activity, the Croatian part of the European corridor Vc will be finished.

The strategic goal of the proposed activity is to achieve one functional, transportation entity, within national borders and at the same time among the three neighbouring countries (Hungary, Croatia and Bosnia and Herzegovina).

### **Rationale for proposed activity (e.g. socio-economic, physical geographic basis)**

The Pan-European Corridor Vc is one of the most important branches of the TEM/TER Project and an unavoidable route in combined transportation, especially with regard to the Vukovar - Šamac canal potential.

Within the AGR system of the main European roads, this route has been designated as E-73, and within a wider scope, the E-73 road connects the European North with the Adriatic and is of vital importance in establishing economic connections, traffic of passengers and goods, and in transfer of other types of human activity.

The main characteristics of the future motorway in economic-traffic terms will be:

- an economically favourable connection of Central Europe with the Adriatic;
- a more favourable connection of specific economic entities, with a special emphasis on agribusiness and tourism;
- sociocultural and civilizational exchanges between different states and regions with spatial developmental potentials along the route, and other positive impacts.

As an integral part of the above mentioned wider traffic system, the proposed activity represents an essential part of the European transport system.

### **Additional information/comments**

The integral part of the planned project, for which the environmental impact assessment procedure is being conducted, is the Drava Bridge of total length 2485 m. The Drava Bridge has already been constructed based on the valid building permits, and the performed EIA from 2004.

The final part of the route from the Drava Bridge to the end of section at km 29+589.67 is currently being constructed, based on valid permits and the conducted environmental impact assessment from 2004.

### **(ii) Information on the spatial and temporal boundaries of the proposed activity**

#### **Location and description of the location (e.g. physical-geographic, socio-economic characteristics)**

The concerned sections of the A5 Motorway, from the Hungarian Border to Beli Manastir and from Beli Manastir to Osijek are geographically located in the area of Baranja for the most part, and only a smaller part (a little less than the last 5 km) is in the region of Slavonia.

In terms of the political and territorial organization of the Republic of Croatia, the concerned project is located in the area of the northeast part of Osijek-Baranja County. At the local level, the motorway route passes through the area of the Town of Beli Manastir and municipalities of Jagodnjak, Čeminac, Darda, Petlovac and Petrijevci.

The Baranja region, through which the motorway route runs in the north-south direction, encompasses 1147 square kilometres. It is located in the area between two large rivers, Drava and Danube, and the state border with Hungary.

Baranja is mostly a lowland area, with non-complex terrain and significant water resources. The strip along the Danube, Drava and Karašica is a flood zone, with many river backwaters and wetland (Kopački rit - Nature Park, 177.7 km<sup>2</sup>, zoological reserve 70 km<sup>2</sup>). Flooding of water courses has been dealt with for more than a century; around 8000 ha of land has been improved, ca. 135 km of levees and 1056 km of channels have been constructed.

Drained areas (river terraces and plateaus) are used for agricultural production. 48% of Baranja area is covered by ploughfields, while forests cover around 20% of territory.

On the motorway route, the largest part is occupied by agricultural land, and only a small part of areas along the route is covered by forest vegetation, which is mostly in the area of the Drava flood retention area in the length of 2.5 km.

The population density in the entire project area is relatively low, except at the very end of the project area, where the motorway route passes near the suburb of the City of Osijek.

The communities closest to the planned motorway are, viewing from the north to the south, as follows: Beli Manastir, Jagodnjak, Novi Čeminac, Petrijevci and Josipovac.

#### **Rationale for location of proposed activity (e.g. socio - economic, physical - geographic basis)**

The location of the proposed project is defined in the physical planning documents at the county and local levels, the adopted design solutions and valid building permits for the construction of section II, and the point of connection to Hungary. The point of connection on the state border with the M6 Motorway in Hungary has been adopted based on the Contract between the Government of the Republic of Croatia and the Government of Hungary.

#### **Time - frame for proposed activity (e.g. start and duration of construction and operation)**

At the moment, time-frames for the realization of individual phases of project construction are not known. Realization of the planned project will primarily depend on the possibilities of financing construction in phase I, and on the traffic growth for phase II. The schedule for construction of concerned sections will be defined in the next four-year Public Roads Construction and Maintenance Program for the period 2017-2020.

**Maps and other pictorial documents connected with the information on the proposed activity**



Figure 1: Motorway A5 route



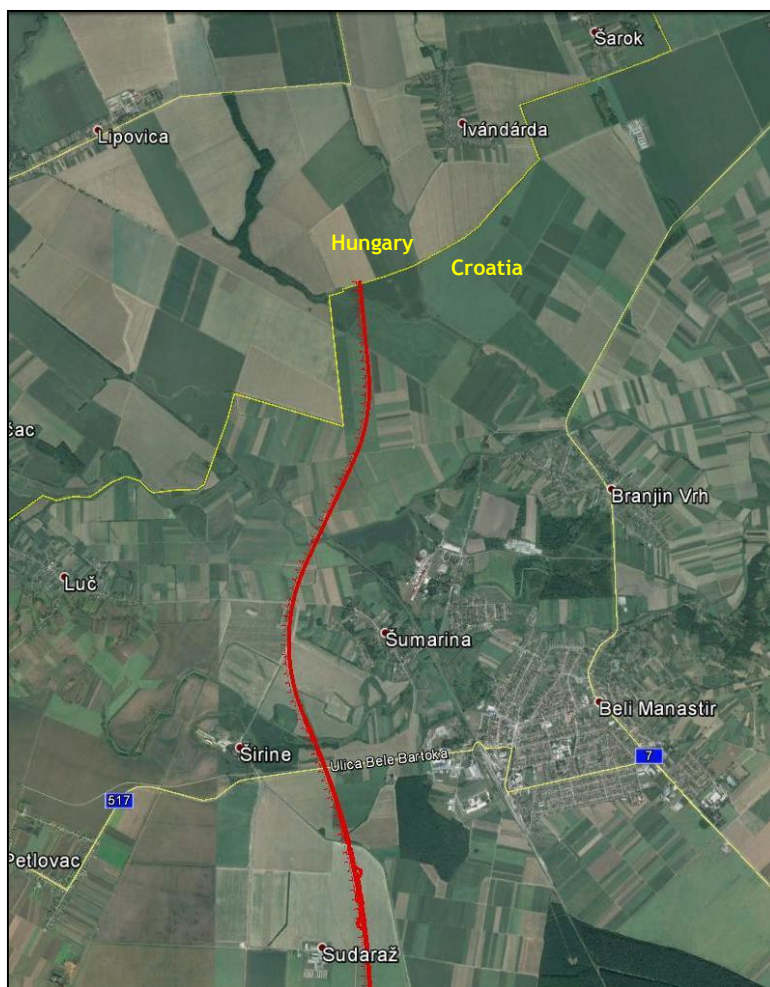


Figure 3: Position of the A5 Motorway route, section I Hungarian Border - Beli Manastir



Figure 4: Part of the route of section II with crossing over the Drava flood retention area over the Drava Bridge (area of the Regional Park Mura - Drava)



Figure 5: View of the Drava Bridge in the construction phase



### (iii) Information on expected environmental impacts and proposed mitigation measures

#### Scope of assessment

The environmental impact assessment procedure for the proposed project of construction of a part of A5 Motorway covered all environmental constituents on which the proposed project could potentially have an impact (water, biodiversity, forests, wild game, soil, archaeological sites, landscape and air). Also, the potential waste, noise and light pollution load on the environment due to construction and use of the motorway have also been included, as well as the potential impacts on economic activities represented in the area where the motorway passes (transport network and traffic, agricultural land, forestry and hunting). The impacts on protected natural areas, ecological network and climatic changes have been considered separately.

The environmental impact assessment also considered the probability of occurrence of significant transboundary impacts.

#### Expected environmental impacts of proposed activity

##### Impact on traffic and traffic flows

##### Impact during project preparation

At the intersections with the existing state roads, grade-separated junctions are planned, by which the traffic from the secondary network will be connected to the motorway (Osijek Junction, Čeminac Junction, Beli Manastir Junction). Road crossings of overpass type have been planned at intersections with other roads in the area, such as the state, county, local or unclassified.

In cases of collisions with unclassified field roads, the solutions will involve either grade separated overpasses or connecting of intersected roads by parallel unclassified roads.

Undisturbed running of river traffic will also be solved within the project, by ensuring a continuous navigational waterway even under the Drava Bridge.

At intersections with railway lines, viaducts have been planned, which in addition to providing the required railway line clearance, enable passing under the motorway. 2 viaducts across the railway line have been planned, Josipovac Viaduct and Karašica Viaduct.

##### Impact during construction

Motorway construction will have an impact on the traffic within the existing road network, and it will be necessary to ensure optimal conditions of road traffic in the network, in all phases of construction. This also includes local roads along the motorway corridor, which are used by the local population.

Negative impacts during construction related to traffic safety are unavoidable; however they will be reduced to the minimum, by proper site organization and by Temporary Traffic Regulation Design during the period of the execution of works.

Environmental impact is generated by construction of access roads or by using the existing roads, by building the handling areas and parking lots for vehicles and machinery. Proper site organization additionally decreases the environmental impact during construction. The existing field roads are planned to be used for construction site purposes. The existing road network will be used to a minimum extent, in agreement with the manager and under the conditions prescribed by him.

This impact will be significantly reduced by organizing construction in such a way that materials are transported along the motorway route, by performing construction in phases.

For the purposes of transporting machinery or construction elements and products to the site, railway transport will be used for greater distances, in order to reduce the impact on the existing road network as much as possible.

#### Impact during use

Intersections of the motorway with the existing road network have been solved in the design as grade separated, and therefore there will not be any negative impacts on the traffic and traffic flows after construction. Since the motorway will take over a part of the traffic from the existing network, the traffic pressure on the existing state, county and local roads will be reduced, and thus the impact on the surrounding area and settlements lying along the existing roads will also be reduced.

By constructing the motorway, the safety of road traffic, as well as of the railway traffic, the speed of road traffic and the maximum road capacity will be increased. Also, within construction of the bridge over the Drava River, the navigability of the river for the planned category of navigational waterway will be ensured by building bank revetments, groyne and semi-groyne in the river bed.

#### Impact on waters and water bodies

##### Pollution risk assessment

In case of an accident, with respect to surface waters, the greatest danger is if an accident occurs during the period of intense rainfall, i.e. when the drainage system is burdened by waters coming from the road and when a local system of natural surface drainage is established on the surrounding terrain.

This risk is inversely proportional to the distance of the road from the beds of surface watercourse, i.e. the greater the distance, the lower the risk, and vice versa. Due to relatively simple terrain morphology on the greatest part of the route, liquid pollution will primarily try to infiltrate underground, and spreading over the terrain surface will be slow and mostly limited, and it will be possible to prevent it by timely intervention.

From km 3+000.00 to km 9+750.00, the road passes through protection zone III of the Livade well field, and from km 27+440.00 to km 29+589.67, the road passes through protection zone III of the Vinogradi well field, which belongs to the water supply system of the City of Osijek.

Since the road runs through the third (III) zone of sanitary protection of the well field, protection measures have been planned in compliance with the Ordinance on Determination of Sanitary Protection Zones. Rainfall from the sections of the area is under a stricter protection regime, since according to the current findings, the majority of known springs is fed by rainfall infiltration.

In the major part of the Baranja area, semi-permeable deposits are present in the top of the capped aquifers, which indicates that it is not possible to exclude completely the possibility of contamination of shallow aquifers.

### Impacts during construction

The impacts on the following water bodies are possible in the project area: surface water body Travnik, Karašica, Karašica drainage channel, Bojana, Halašica channel, Drava, Dalagaj, Barbara channel, Bistra and Vučica and groundwater body ISTOČNA\_SLAVONIJA SLIV DRAVE I DUNAVA. (EASTERN SLAVONIA, DRAVA AND DANUBE CATCHMENT AREA). The possible impacts are reduced to impacts on physical-chemical elements that support the biological elements of quality and chemical condition, which are possible in case of an accident. However, with proper construction site organization and protection measures it is not expected that the project will have an impact on waters.

During construction, the impacts on waters are possible in terms of impacts on open watercourses, groundwater, well fields and irrigation channels in the project area. These are short-term impacts that will stop immediately upon completion of works on the project.

The greatest impact on waters in the project area of A5 Motorway is at the locations where the road crosses over the watercourses.

During execution of earthworks, increased generation of soil and dust is possible, which can, at the time of the execution of works, cause turbidity of the watercourse, carrying away of significant quantities of earth material, and it can have an impact on air pollution. The intensity and magnitude of the mentioned impacts are primarily conditioned by the procedures during the execution of earthworks as well as weather conditions (dry or wet weather, wind).

During project construction, the potential sources of pollution or other unfavourable impacts on surface and ground waters in the contact and wider project area can be classified as several basic groups:

- the absence of the surface (storm water) drainage system, water on handling surfaces;
- improper storage of petroleum derivatives, oils and lubricants in inadequate tanks and the possibility of accidental spillage;
- filling up of vehicles and construction machinery with fuel, and performance of necessary repairs on areas from where flowing out into the surrounding area without secured protection and cleaning is possible;
- increased quantities of construction, municipal and hazardous waste;

- due to linear character of the works, there is a realistic possibility of intersecting or backfilling the occasional natural drainage paths of surface waters;
- washing out of mud from poorly positioned temporary or permanent stockpiles for excavated material and entering of the material into water courses and groundwater;
- during excavation for construction of bridges and viaducts, the dynamics and the quality status of groundwater can become impaired, especially in parts where these works are carried out under the groundwater level;
- disturbance of the existing water regime and the flood defence system.

A part of the motorway route passes through the sanitary protection zones of the well fields Vinogradi and Livade that must be adequately protected in order to prevent the impairment of the quality of pumped out water.

### Impacts during use

During use, transportation facilities represent a permanent and active source of pollution, as the consequence of traffic.

The sources of pollution that might appear along the motorway project are divided into point and non-point sources. The point sources of pollution are all concentrated pollution sources that discharge pollution that may pollute surface and underground waters. Storm waters that are included in the combined drainage are also considered point sources of pollution.

Unlike these defined sources of pollution, the pollution activated due to the storm water impact in the wider area belongs to non-point sources of pollution.

According to this division, the pollution occurring at certain points along the project area, in restaurants, petrol stations and other special structures along the motorway, belong to point pollutions. Non-point sources of pollution are contaminations of surface and ground waters caused by pollutants from the motorway, such as heavy metals, petroleum products, paints, tire residues and industrial salt sprinkled on roads in winter periods.

The salt is rinsed from the pavement by storm water and during snow melting and it reaches water courses or groundwater and thus decreases the quality of those waters. On the motorway part from km 0+000.00 to km 2+912.78, from km 9+750 to km 22+545, and from km 26+580 to km 27+440, drainage by free discharge has been planned. The mentioned parts of the route are outside the areas under a protection regime and storm water is freely discharged into the environment.

The motorway sections with bridges, which are outside the protected zone of the well field belong to the areas with a more lenient protection regime. They include bridges and their access ramps, in their entire length down to their lowest concave points. Since this is the case of greater quantity of storm water gathered on the road pavement, which is discharged into the environment at points, preventive treatment of storm water in oil and grease separator has been planned before discharge into the road channel.

On the section of Beli Manastir-Osijek Motorway, the drainage of collected storm water is solved in the mentioned way from km 22+545 to km 26+580, in order to protect the Drava River and its flood retention area, as well as of the river well field Pampas, which is located several kilometres downstream, which belongs to the water supply system of the City of Osijek.

From km 3+000.00 to km 9+750.00, the motorway passes through protection zone of the Livade well field, and from km 27+440.00 to km 29+589.67, the road passes through protection zone III of the Vinogradi well field, which belongs to the water supply system of the City of Osijek. Since this is the third (III) sanitary protection zone of well fields, preventive treatment of storm water collected from the road pavement has been planned, before discharging it into the road channel. Secondly, in order to increase the protection level after treatment in the separator, the storm water is carried to a lagoon where high efficiency of pollution elimination is ensured by the process of prolonged retention. After treatment, the collected storm water is discharged into the pertaining perimeter road channel and carried to the receiving water body, through which it flows further outside the sanitary protection zone of the well field.

### Impact on protected areas

The planned project area lies within the protected area of the Regional Park Mura - Drava / Transboundary Biosphere Reserve Mura-Drava-Danube.

A part of the route of the planned A5 Motorway, section Beli Manastir-Osijek, which passes through the protected area of the Regional Park Mura Drava has for the most part already been built in the area through the Regional Park.

The construction of the bridge across Drava River and crossing of the route across Drava wetlands brought about a limited disappearance of habitats, including on the segment of the route planned for motorway construction, which passes through the mentioned area.

Considering the magnitude of the project, despite the inevitable habitat fragmentation, the impact of the concerned project on the area in question is considered acceptable, provided that the preparation and works are carried out carefully, in such a way to reduce the damage to boundary habitats to the lowest possible degree and that the work zone is rehabilitated upon completion of works.

### Impact on ecological network

The planned project of the construction of A5 Motorway: section Hungarian Border-Beli Manastir and Beli Manastir -Osijek passes through two ecological network areas:

Area of conservation important for birds (POP):

- HR1000016 Podunavlje i donje Podravlje

Area of conservation important for species and habitat types (POVS):

- HR2001308 Donji tok Drave

For the purposes of assessing the impact of the planned project on the ecological network areas, a separate procedure of Main Assessment, concerning the acceptability of the project for the ecological network, was conducted. After the procedure was conducted, the competent state administration authority - the Ministry of Environmental and Nature Protection adopted a Decision on 3 June 2014 stating that the planned project - the Construction of A5 Motorway: Hungarian Border (BC Branjin Vrh)-Beli Manastir -Osijek-Đakovo- B&H Border (BC Svilaj), section of the border Hungary-Beli Manastir and section Beli Manastir-Osijek, is acceptable for the ecological network, provided that the determined measures for the mitigation of negative impacts on preservation targets and

the integrity of the ecological network area and the monitoring and reporting program related to the status of preservation targets and the integrity of the ecological network areas, stipulated by the law and this Decision are implemented.

### Impact on habitats, flora, fauna and ornithofauna

By analysing the more narrow location of the planned project and the wider area in a 1000 m zone, the most represented habitat type is A-Surface inland water and marsh habitats, followed by: I Cultivated non-forest areas and habitats with weed and ruderal vegetation, and habitats marked J Constructed and industrial habitats. The determined composition and presence of the main habitat types show a high degree of anthropogenic impact on the formation and maintenance of habitat types.

The negative impact of the project on forest habitats is expressed as fragmentation and reduction of areas covered by forests. In the management unit Haljevo-Kozaračke šume, the route partially encroaches on the forest edge, and in one place, a very small forest area of 2.78 ha, will remain isolated. The impact on the integrity of forest habitats will also be present in the Drava River flood retention area, where the motorway route crosses over the Drava River bed by a bridge, then passes through Drava wetlands, thus intersecting this forest and wetland area.

Because of motorway construction, ca. 37.38 ha of forest areas will be permanently re-purposed.

By considering the spatial limits of the project and the distribution of the riparian alluvial willow and poplar forests in the area of the Republic of Croatia, the described impact will not disturb the survival and integrity of these habitats to a greater degree, provided that protection measures are implemented.

The flora of the more narrow and the wider area of the planned project includes a total of 20 plant species that are protected at the national level, according to the Ordinance on Strictly Protected Species (OG 144/13) or at the international level, i.e. included in the Red Book of Vascular Flora of Croatia, based on the degree of estimated threat.

According to the actually determined status of the diversity of plant species (flora), and their general distribution, significant undesirable consequences of the project on the presence of plant species, composition and distribution of plant communities are not expected. Rare, threatened and protected plant species, as well as those listed in the Red Book of Vascular Flora of Croatia, are also represented in other areas of the Republic of Croatia.

Within the project area and the wider area of project impact, the presence of rare and/or threatened and strictly protected animal species is possible, which are linked to habitat types present in the wider project area.

As a physical barrier, the motorway causes habitat fragmentation, the negative impact of which is primarily manifested with respect to animal population, as it causes breaking up of a continuous habitat, threatens its ability to survive due to unavailability of seasonal sources of food and the loss of areas for reproduction and raising offspring.

During works on project preparation and construction, temporary negative impacts on the fauna are expected (small and medium mammals, reptiles, amphibians) due to disturbance of animals by noise generated by work machinery, dust spreading, air pollution from exhaust gases, and deaths of animals with low mobility, which happen to be in the project area. These impacts can be reduced to an acceptable degree by proper site organization, and mostly by implementing protection measures during execution of works. It is expected that the species that frequent the surrounding area of the project will avoid the area that is within the scope of the mentioned impacts during project construction.

During project use, the impacts can manifest as consequences due to re-purposing and habitat fragmentation, disturbance of animals due to increased noise from vehicles, air pollution from exhaust gases, deaths of animals during crossing or flying over (collision with noise barriers), and impact due to light pollution from public lighting of interchanges. By implementing the planned mitigation measures, it is not expected that the project will have a negative impact on fauna inhabiting the area of the planned project.

### Impact on forests and forestry

Due to motorway construction, 37.38 ha of forest areas owned by the state has been re-purposed or is to be re-purposed. A total of 6936 m<sup>3</sup> of timber was cut on the mentioned surfaces. In Haljevo-Kozaračke management unit, pedunculate oak predominates, while mostly artificially cultivated willow and Euro-American poplars are present in other management units.

On the parts where the route passes along the edge, i.e. through the forest, it is possible that the trees might be damaged due to the change of habitat circumstances (water supply) and the position of trees in forest stands (light).

### Impact on game and hunting

Passing of the motorway through the hunting grounds will reduce their area to a smaller or greater extent, intersects their boundaries unnaturally, and breaks up individual hunting grounds into two or several parts.

Except for the direct loss of areas, the motorway directly disrupts the ecological conditions of the habitat, based on which site classes for individual wild game species have been defined, and according to which the population numbers of wild game that may inhabit the mentioned area naturally without greater impact on the environment and other animal species. Passing of the motorway will to a greater or lower degree change the assumptions based on which hunting is performed and consequences will occur (e.g. smaller area means a lower number of wild game etc.).

Due to motorway construction, the direct loss of habitats is evident, i.e. hunting grounds, as well as their fragmentation. The migration paths of the wild game are directly cut off, which particularly refers to deer. The seasonal migrations are expected for deer, from the area of Kopački Rit westwards, towards Hungary and the Drava wetlands and towards agricultural areas and in the flood retention areas along the Drava River. Furthermore, migrations from forest areas towards agricultural areas are also to be expected.

On the planned sections, in addition to the use of all openings in the motorway bed; culverts, smaller bridges, the Drava Bridge by which free passage of wild game in the flood retention area is ensured, a separate wildlife crossing Haljevo 1, wildlife crossing Haljevo 2, bridge and wildlife crossing Stara Barbara, bridge and wildlife crossing Ćirina Ada and wildlife crossing under the Drava Bridge have been planned.

This way, the safety of traffic that will run on the motorway is also improved in this way, i.e. the possibility of vehicle collision with wild game at high speeds is prevented, which can be fatal.

### Impact on the soil and agricultural soil

Road traffic has a significant impact on the soil and its use for agricultural production, including air pollution, surface run-off of storm water, which contains oils, salts and other pollution such as heavy metals. Then, the negative impact occurs due to the loss of land for agricultural production, and there is a risk of accidental pollution of soil and water.

The motorway route passes over considerable areas of agricultural land, which differ by the degree of cultivation. Cultivated agricultural land prevails in the project zone. Furthermore, another important fact is that drainage has been constructed on significantly large areas. The motorway as a structure, which will be introduced into a space of already formed drainage systems for excess water, can have a greater or lesser impact on these systems. The construction will put out of function some of the channels and drainage pipes, and the position and/or flow profile of certain channels will have to be changed.

### Impact on cultural-historical heritage

The impact of motorway construction on cultural heritage primarily refers to the threatened archaeological sites.

On the route of the section Hungarian Border -Beli Manastir, on the site designated AN 1 BELI MANASTIR „ŠUMARINA“, as well as on the entire route of the section, it is necessary to perform an expert archaeological site inspection, documenting and mapping of the terrain in order to precisely determine the potential threat to the archaeological site.

The route of the section Beli Manastir-Osijek has been fully explored and all identified archaeological sites are not threatened by the construction of the motorway section, however in order to protect the archaeological sites, during project construction, additional protection measures are required.

### Impact on the landscape

The construction of the motorway with the required technical, safety and economically sustainable standards, and location in space, will have a significant negative impact on the existing landscape. The impact will mostly be manifested on the stretch from Beli Manastir to Drava flood retention area. The majority of the route here passes along the central part of Baranja plain, in the direction north-south, which generates a significant impact due to separation of space and changes of views from a wider area.



## Impact on air quality

By considering the impact of the concerned project on air quality, the following negative impacts have been recognized:

- emission of gases (CO, NO<sub>x</sub>, Hc, PM etc.) from the exhaust system of motor vehicles during project use. The share of heavy cargo vehicles constitutes an important factor, especially in terms of contribution to the concentration of nitrogen oxides;
- emission of particulate matter (PM<sub>10</sub>, PM<sub>30</sub>), rising from the motorway due to the impact of strong turbulent air current caused by passing vehicles.

Simulations have been performed for the stated assumed impacts, which had the objective to determine the contribution of the planned motorway to total emission, in the wider project area, for the considered air quality parameters (NO<sub>x</sub>, CO, PM<sub>10</sub>), during project use.

Simulations included the area around the project area, wherein the project area was considered by sections. The planned motorway was taken as the source of pollution with reference data for traffic load:

- Section I.: AADT for 2030 = 675
- Section II.: AADT for 2030=3378

In order to determine the exhaust gas emissions, the following structure of vehicles was assumed: 50 % passenger cars - petrol, 35 % passenger cars - diesel, 15 % cargo vehicles.

In addition to the mentioned assumptions and the planned traffic load, the following can be expected:

- the limit values for NO<sub>2</sub> and CO will not be exceeded under the impact of the concerned project, and the pollution will be within limits of acceptability
- the limit values for PM<sub>10</sub> may potentially be exceeded on the motorway route, while outside the road corridor, the pollution under the impact of the concerned project will be within limits of acceptability.

The impact on micro-climate will be of local character, usual for motorways, while the impact on the ozone layer will be negligible, due to low traffic load.

## The impact of climatic changes (Dangers of climatic changes in the project area)

For the impact of climate and the assumed climatic changes on the planned project, the methodology described in the European Commission's Non-paper Guidelines for Project Managers ( Making vulnerable investments climate resilient). The tool for climate resilience analysis consists of 7 modules which are employed during project development.

Low values of risk factors were obtained by performed analysis (from 4/25 to 10/25), so it can be concluded that there is no need for implementation of additional impact mitigation measures.

## Impact on noise levels

### During construction

Noise will be generated in the environment during construction as the consequence of operation of construction machinery and devices, and cargo vehicles related to the construction site operation.

### During use

It was established by calculation analysis that it will be necessary to undertake measures for the reduction of noise emissions in the environment. For these purposes, a software was used to calculate the noise protection barriers, which will achieve the required noise reduction at critical reference points (structures outside the settlements of Čeminac and Petrijevci).

## Impact of light pollution

Light pollution generated by artificial light emissions, which result in contamination of the sky and the environment by excess light is expected at planned junctions, Drava Bridge and RSF and FTS structures. The impacts of the mentioned structures, as the locations with increased lighting, can be manifested as: disorientation and disturbance of animals due to light generated by passing vehicles and deaths due to light pollution from the public lighting of junctions. Since it was estimated that during project use, possible negative impacts on the bat fauna are expected, it is necessary to implement adequate measures, in order to mitigate these impacts.

## Impacts on population and economy

### Impacts during construction

During construction, more pronounced impacts on the population and populated areas are not expected, since the route does not pass in the immediate vicinity of populated areas, except near the settlement Jagodnjak.

### Impacts during use

Negative impacts in terms of increased air pollution, noise increase, and changes to the landscape, are direct impacts on the population living the narrower and the wider project impact zone. The impact on air quality and noise level will directly depend on the traffic volumes, and according to the calculations made, these impacts will not be significant provided that the protection measures are implemented.

Impacts on population in the wider area of the project are positive, in terms of better traffic connections, which is achieved by motorway construction.

The impact of the planned project, which will end the motorway construction in the Croatian part of the Corridor Vc, can also bring about positive developmental consequences:

- an increase of the degree of accessibility and mutual connections between settlements or centres of activity, and it will become easier to join through traffic towards different destinations both at the local and international level;
- an increase of the possibility of development of different facilities linked with increased accessibility and increased transport of people and goods. In this case, increased construction can be expected, and development of different economic initiatives (new forms of economic activities, development of tourism, hospitality industry etc.);
- it is possible to expect a gradual growth of population.

## Impact of waste

During construction and project use, different types of hazardous and non-hazardous waste will be created (waste oils, packaging waste, absorbents, construction waste, municipal waste etc.). According to the estimates based on construction and use of other motorways in the eastern part of the Republic of Croatia, it can be concluded that these are smaller quantities of waste and it will be possible to dispose them within the existing waste management system.

## Inputs (e.g. raw material, power sources, etc.)

The input data for impact assessment include all relevant data on the project based on the prepared preliminary design for section I and the detailed design for section II, which defined the spatial, technical and other requirements for construction and use of the project, as well as the need for natural resources.

It will be necessary to provide significant quantities of material that is 3,060,000.00 m<sup>3</sup> for the construction of the motorway embankment. The required quantity of material will be provided mostly from the nearest quarries, while only a smaller part of the total quantity will be provided by extracting material from the water course only during works on watercourse maintenance.

For each individual environmental constituent, data has been gathered from literature sources, available databases and performed field investigations.

## Outputs (e.g. amounts and types of: emissions into the atmosphere, discharges into the water system, solid waste)

During motorway use and due to vehicle traffic, the quantities of emissions of greenhouse gases and dust have been determined, as well as the manner of drainage and type of treatment of storm water runoff, waste types and noise levels.

For other impacts by environment constituents, the impacts have been stated in the form of description (type of impact, magnitude and importance).

### **Transboundary impacts (e.g. types, locations, magnitudes)**

The planned A5 Motorway, section: Hungarian Border - Beli Manastir starts at the state border of the Republic of Croatia with Hungary, so it is necessary to consider the possibility of occurrence of certain temporary and permanent environmental impacts of the motorway in the neighbouring country of Hungary.

#### Impacts during project preparation and construction

Impacts that will be generated during project construction are of temporary character and they will completely stop after the construction has been completed. The usual impacts of construction are expected, which will, due to air transmission reach the transboundary area as well (pollution of air and soil by particle transport, and noise). Since the closest community in Hungary is at the distance of 2 km, only temporary impact is expected due to appearance of dust, which will have a limited-local impact only on agricultural soil in the border zone.

#### Impacts during project use

During motorway use, i.e. running of traffic near the interstate border, all impacts that the motorway has in the Republic of Croatia have been assumed, and which have the characteristic of spreading to the surrounding area, i.e. spreading of pollution. These are primarily the pollution of air, soil and water, and noise.

The impacts on water and noise levels are not expected, since the motorway is located at a sufficient distance from the closest community of Ivandarda (ca. 2 km) and from the watercourse Topoljš -Travnik (ca. 400 m) in Hungary, and due to low values of forecast traffic.

The potential impact on soil and agricultural land, due to pollution by traffic, is possible in the zone where the motorway runs near the interstate border (the starting part of the motorway route, from ch. 0+000 to ch. 1+700km).

By performed simulations of the impact of the planned motorway, in total immission in the wider project area for the considered air quality parameters (NO<sub>x</sub>, CO, PM<sub>10</sub>), during project use, the following was established, for the planned traffic load in 2030:

- the limit values for NO<sub>2</sub> and CO will not be exceeded under the impact of the concerned project, and the pollution will be within limits of acceptability
- the limit values for PM<sub>10</sub> may potentially be exceeded on the motorway route, while outside the road corridor, the pollution under the impact of the concerned project will be within limits of acceptability

#### Light pollution

Several key structures have been planned in the project area (bridge across the Drava River in the area of the Regional Park Mura-Drava) as well as junctions and RSFs as the locations with increased lighting on the planned motorway. During motorway use, the impacts on animal species can be manifested through: disorientation and disturbing of the animals by light, and deaths due to light pollution from the public lighting of the junction. Since it was estimated that during project use, possible negative impacts on the bat fauna are expected, it is necessary to adhere to the prescribed protection measures, in order to reduce the impacts to the lowest possible extent.

The implementation of all prescribed environmental protection measures and environmental status monitoring in the Republic of Croatia have a direct impact on the reduction of potential transboundary impacts.

### Protected natural areas

By consulting the current NATURA 2000 Network Viewer, available on the Internet site of the European Environment Agency ([natura2000.eea.europa.eu](http://natura2000.eea.europa.eu)), it was established that the planned A5 Motorway construction project on the section: Hungarian Border - Beli Manastir will not have an impact on the ecological network areas (Natura 2000) in Hungary. The closest ecological network area in Hungary designated: **HUDD 20065 TÖTTÖSI-ERDŐ** is located at the shortest distance of ca.8 km from the state border and the planned border crossing Branjin Vrh (Figure 4.3.-1.).



Figure 4.3.-1.: The position and the distance of the beginning of the section of A5 Motorway, section Hungarian Border-Beli Manastir with respect to the ecological network area HUDD 20065 TÖTTÖSI-ERDŐ in Hungary.

The mentioned ecological network area in Hungary is a forest complex of 1,189 ha area, where the following target habitat types are represented: 91L0 Illyrian oak-hornbeam forests - Erythronio-Carpinion (59.64 ha) and 91M0 Pannonian-Balkan turkey oak - *Quercus cerris* (654.03 ha).

According to the EIA Study summary (January, 2016) prepared in Hungary, concerning the impact assessment of the construction of M6 Motorway on the section Bóly-Ivándárda (state border), 20.5 km in length, it was established that the project does not have an impact on the integrity of the ecological network areas, or the target habitat types. Certain impacts on biodiversity were recognized in the study such as: habitat fragmentation, isolation of populations and disruption of migrations, based on which protection measures have been prescribed.

## Regional Park Mura-Drava / Transboundary Biosphere Reserve Mura-Drava-Danube

The protected area of the Regional Park Mura-Drava (hereinafter: RPMD) has total area of 87,680.52 ha and it extends across several counties. In Osijek-Baranja County, there are 26,102.49 ha or 29.8 % of total park area.

The area of RPMD spatially includes 35 ecological network areas important for wild taxa and habitat types and 5 ecological network areas important for birds, as well as the transition area with agricultural areas and smaller settlements. Wet habitats, which are a rarity at European level, give special importance to this area, and which are still present to a considerable degree along these two rivers: alluvial forests, wet grasslands, dead backwater, abandoned beds, meanders, sandbars and steep, eroded banks.

The wider area of the Mura and Drava Rivers is also inhabited by a large number of threatened and protected bird species. Wet habitats of these rivers are suitable habitats for numerous reptile and amphibian species, and the fauna of dragonflies and butterflies is also very significant and exceptionally rich.

The International Coordinating Council of the UNESCO's Man and the Biosphere Programme (MAB) declared the Mura-Drava-Danube Transboundary Biosphere Reserve between the Republic of Croatia and Hungary on 11 July 2012 and included it in the World Network of Biosphere Reserves. The total area of the biosphere reserve amounts to 631,460.71 ha; out of which 395,860.71 ha (63 %) are situated in Croatia, and 235,600 ha (37 %) is in Hungary.

The protection of the regional park area i.e. of the transboundary reserve does not jeopardize the performance of economic activities, but enables them through implementation of environmental protection requirements so that they do not jeopardize the natural values because of which the area was protected.

A part of the route of the planned A5 Motorway, section Beli Manastir-Osijek, which passes through the protected area of the Regional Park Mura Drava has for the most part already been built in the area through the Regional Park.

The construction of the bridge across Drava River and crossing of the route across Drava wetlands brought about a limited disappearance of habitats, including on the segment of the route planned for motorway construction, which passes through the mentioned area.

Considering the magnitude of the project, despite the inevitable habitat fragmentation, the impact of the concerned project on the area in question is considered acceptable, provided that the preparation and works are carried out carefully, in such a way to reduce the damage to boundary habitats to the lowest possible degree and that the work zone is rehabilitated upon completion of works.

### **Proposed mitigation measures (e.g. if known, mitigation measures to prevent, eliminate, minimize, compensate for environmental effects)**

In the commenced procedure of environmental impact assessment, environmental protection measures have been proposed, as well as the environmental status monitoring program.

The following environmental protection measures have been prescribed during the process of project design development:

- Water protection measures
- Forest protection measures
- Protection measures for soil and agricultural land
- Protection measures for game and hunting grounds
- Landscape protection measures
- Light pollution protection measures

During preparations for construction and during construction the following measures have been prescribed:

- Water protection measures
- Protection measures for bioecological characteristics
- Forest protection measures
- Protection measures for game and hunting grounds
- Protection measures for soil and agricultural land
- Protection measures for cultural-historical heritage
- Protection measures against noise level increase
- Air protection measures
- Light pollution protection measures

The following measures have been prescribed during motorway use:

- Fauna protection measures
- Water protection measures
- Protection measures for game and hunting grounds
- Protection measures against unexpected events (ecological accidents)
- Light pollution protection measures

The Environmental Monitoring Program was prescribed for the following:

- Water status monitoring during construction and use of the motorway
- Game status monitoring during motorway use

#### **(iv) Proponent/developer**

##### **Name, address, telephone and fax numbers**

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**(v) EIA documentation****Is the EIA documentation (e.g. EIA report or EIS) included in the notification?**

-No.

**If no/partial, description of additional documentation to be forwarded and (approximate) date(s) when documentation will be available**

The EIA Study, as the basis for the implementation of the environmental impact assessment procedure, is being prepared.

**Additional information/comments**

Documents used for notification preparation

All documentation, in textual and graphic form, which is used for the preparation of the EIA Study for the A5 Motorway on Corridor Vc, on sections Hungarian Border- Beli Manastir and Beli Manastir - Osijek has been used during preparation of this report.

The documentation that is used as the basis for the preparation of the EIA Study consists of data from the existing national databases for each environmental constituent separately, of previous research, field visits and performed measurements.

The source of data on the planned construction project of two motorway sections is the design documentation (preliminary design of section I and detailed design of section II).

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