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Volume 2: Technical Annexes to the ESIA

Annex E: Appropriate Assessment on NATURA 2000 areas

October 2023

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Infrastructures: Energy, Environment, Social, Transport and Digital Economy

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The Infrastructure Project Facility (IPF) is a technical assistance instrument of the Western Balkans Investment Framework (WBIF) which is a joint initiative of the European Union, International Financial Institutions, bilateral donors and the governments of the Western Balkans which supports socio-economic development and EU accession across the Western Balkans through the provision of finance and technical assistance for strategic infrastructure investments. This technical assistance operation is financed with EU funds.

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1 Introduction

1.1 Project background

In August 2020 ENOVA was commissioned to undertake Environmental and Social Assessment referring to the Corridor Vc subsection Konjic (Ovcari) - Prenj Tunnel - Mostar North. Desk and field surveys of the project area were conducted in the period from 2020 to 2022. Performed desk survey found that the planned motorway crosses two potential Natura 2000 sites (Zlatar and Prenj-Cvrsnica-Cabulja) and two candidate Emerald sites (Zlatar and Konjicka Bijela) which triggered the need for appropriate assessment in line with Article 25 of *Law on Nature Protection of FBiH* and Article 6(3) of the Habitats Directive in order to enable the project to meet the requirements of the EBRD's PR 6. Parts of the Habitats Directive have been passed by the *Decree on the Natura 2000 Program – Protected Areas in Europe*[1] adopted by the Government of Federation of Bosnia and Herzegovina in order to establish the ecological network of protected natural habitat types and species in the Federation of Bosnia and Herzegovina and to include certain sites into international network of protected natural habitats and species.

The purpose of this Report is to provide all relevant information that can help in the process of assessing the Project's potential adverse impacts to the identified potential Natura 2000 sites and, if identified, how they can be mitigated. The screening report will form an Annex E: Appropriate Assessment on potential NATURA 2000 areas to the final Environmental and Social Assessment Study.

1.2 Introduction to Appropriate Assessment

The Emerald Network is a pan-European ecological network with the goal to preserve the biodiversity of Europe. Its establishment is one of the requirements of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979), also known as the Bern Convention. The Emerald Network is one of the main mechanisms for its implementation. The Bern Convention is built around the principle that the long-term survival of wild species is only possible by protecting their habitats. Subsequently, habitat conservation is its main focus. If a development project is implemented within the Emerald Network site borders, more detailed research is necessary to assess the potential impact on the site, including its species and habitats.

Similarly, according to the Habitats and Birds Directives, member states of the European Union are obligated to safeguard areas and species that are vital to the preservation of wildlife in Europe. If a plan or project could have an impact on one of these sites, it must be assessed to see if it would compromise the integrity of the site. This assessment will help the decision-maker decide whether to move forward with the plan or project. Appropriate Assessment (AA)

[1] Official Gazette of FBiH, No. 41/11

or, sometimes, the Habitats Directive Assessment (HDA) or is the name of this evaluation procedure.

Due to the fact that a part of the planned project passes through the potential Natura 2000 areas of Bosnia and Herzegovina, it is necessary to conduct Appropriate Assessment. The requirement for Appropriate Assessment of plans or projects originates from national laws, Bern Convention and EU Directives.

1.2.1 National legislation

The *Law on Nature Protection*[2] is the foundation of nature protection in FBiH. It defines the relevant bodies for nature protection, general conservation measures, evaluation of operations in nature, habitats and ecologically important areas, species and subspecies, protection and conservation of biodiversity and ecosystems, the conditions for establishment of Natura 2000, etc. The most relevant articles for AA process are summarized below:

- Articles 25-29 (inclusive) are focused on the appropriate assessment. They define the terms and elaborate on the AA process that follows the Habitats Directive requirements for performing AA. They state that AA shall be done for Projects planned within ecological network. AA shall be done as a part of the EIA. AA is mandatory for Projects that may cause significant impacts on conservation objectives and integrity of the ecological network. Scope of the AA shall be determined by a Rulebook written by the Minister.
- Article 58 states that the Government of the FBiH ("the Government") will establish Natura 2000 ecological network.
- Article 59 states that the Government will, by decree, based on the established criteria of the Habitats Directive and submitted relevant scientific information, create a list of habitat types and species that are widespread on the territory of FBiH. When a site of EU importance is identified, the Government will mark that area as a specially protected area within six years. The Government will establish priorities regarding the importance of sites for: maintaining and establishing a favourable state of habitat types and species, the connectivity of Natura 2000, and evaluating threats of degradation and destruction to which the areas are exposed. When the area is included in the Natura 2000, the provisions of Article 60, paragraphs 2, 3 and 5 will apply to it.
- Article 60 states that if the habitats are part of a specially protected area, the Government will prescribe the necessary protective measures together with a management plan that is specially made for those areas, or that is integrated into other development plans, legal, administrative, or contractual measures that correspond to the ecological needs of said habitats. The Government will prescribe appropriate measures in specially protected areas to avoid deterioration of habitats and habitats of species. Any plan or project that is not directly related to or not necessary for the management of the site but is likely to have a significant impact on it, either alone or in combination with other plans or projects, will be subject to appropriate assessment in terms of conservation objectives.

[2] Official Gazette of FBiH, No. 66/13

- Article 67 lists ecologically important areas and states that they shall be proclaimed by the Government upon proposition made by the Federal Ministry for Environment and Tourism accompanied by expert opinion from Federal Institutes and responsible cantonal bodies.
- Article 68 states that protection of ecologically important areas is ensured by implementation of adequate measures and conditions for protection aiming to preserve biological and landscape diversity. Actions causing destruction in ecologically important area aren't allowed.
- Article 69 states that international ecologically important area is an area that was established by the Government based on the Law on Nature Protection. Destruction and significant damage to such areas is not allowed.

The Government of Federation of Bosnia and Herzegovina also adopted the *Decree on the Natura 2000 Program – Protected Areas in Europe*[3] in 2011, in order to establish the ecological network of protected natural habitat types and species in the Federation of Bosnia and Herzegovina and to include certain sites into international network of protected natural habitats and species. The *Decree* was brought based on the former *Law on Nature Protection* from 2003. This *Decree* includes objectives for preservation of Natura 2000 sites and necessary measures for preservation or for favourable state of population of wild plants and animal species in the nature, their respective habitats and habitat types. The *Decree* passes a part of EU Habitat directive[4] with its Annexes and a part of the Birds Directive[5] on the conservation of wild birds with its Annexes.

It can be concluded that the relevant legislation in FBiH provides good foundations for future official establishment of Natura 2000 ecological network. However, the work on proclamation of such areas is not building on these foundations. Official (potential) Natura 2000 network was not established by the Government on the basis of the *Law on Nature Protection*. The Law states that the Government is to adopt a list of habitats and species of concern by a Decree and, if any of EU importance are going, that area will be a special protected area. None of these provisions of the Article 59 have happened until the finalization of the ESIA Package. Due to the fact that no official Natura 2000 network, or protected areas based on it, are proclaimed, the legal basis for AA process for Natura 2000 sites is uncertain according to the conditions provided in the FBiH law. Nonetheless, as BiH ratified the Bern Convention, the obligations posed by the Convention regarding Emerald sites must be implemented.

It is important to note that Bosnia and Herzegovina is not a member of the European Union and does not have the obligation to formally proclaim Natura 2000 areas before accession to the EU. The *Support to implementation of the Birds and Habitats directives in Bosnia and Herzegovina* project aimed to identify

[3] Official Gazette of FBiH, No. 41/11

[4] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

[5] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009

potential Natura 2000 sites in BiH with appropriate site codes, areas, present species and habitats. First preliminary Natura 2000 sites for Bosnia and Herzegovina have been proposed based on the value of species and habitats but they have not been officially recognized nor do they have protection and management plans.

Nonetheless, as a precaution and in the absence of official documentation regarding Natura 2000 in FBiH, findings of aforementioned project have been used to establish whether the planned motorway encroaches any potential Natura 2000 areas. In order to fully understand and evaluate impacts Project might have on sites potentially included in future ecological network, the sites identified as a part of the aforementioned project are going to be assessed as (potential) Natura 2000 sites officially recognized by the FBiH Law.

1.2.2 Bern Convention

The Bern Convention is a binding international legal instrument in the field of nature conservation, which covers most of the natural heritage of the European continent and extends to some States of Africa. Its aims are to conserve wild flora and fauna and their natural habitats and to promote European co-operation in that field.

The Convention places a particular importance on the need to protect endangered natural habitats and endangered vulnerable species, including migratory species. All countries that have signed the Bern Convention must take action to: promote national policies for the conservation of wild flora and fauna, and their natural habitats; have regard to the conservation of wild flora and fauna in their planning and development policies, and in their measures against pollution; promote education and disseminate general information on the need to conserve species of wild flora and fauna and their habitats; encourage and co-ordinate research related to the purposes of this Convention and also co-operate to enhance the effectiveness of these measures.

Non-EU countries, such as Bosnia and Herzegovina, fulfil some of the requirements of the Bern Convention under the Emerald Protected Areas Network. Each Emerald site is defined as an Area of Special Conservation Interest (ASCI) and is designated on the basis that it fits one or several of the following conditions:

- It contributes substantially to the survival of threatened species, endemic species, or any species listed in Appendices I and II of the convention
- It supports significant numbers of species in an area of high species diversity or supports important populations of one or more species
- It contains an important and/or representative sample of endangered habitat types
- It contains an outstanding example of a particular habitat type or a mosaic of different habitat types
- It represents an important area for one or more migratory species; and

- It otherwise contributes substantially to the achievement of the objectives of the convention.

Emerald Network is an ecological network composed of Areas of Special Conservation Interest (ASCI) as an equivalent of Natura 2000 in non-EU countries. Setting up the Emerald Network at national level is considered as one of the main tools for the signatory countries to comply with their obligations under the Bern Convention. As BiH ratified the Bern Convention in 2008, the obligation extends to BiH as well. Bosnia and Herzegovina is not a member of the EU; however, timely and legally-binding proclamation of Emerald sites would ensure a less challenging transition to Natura 2000 which provides a more strict legal protection and stronger enforcement compared to Emerald.

For this assessment to be applied in Bosnia and Herzegovina, it shall also be applied to an Emerald site or Area of Special Conservation Interest (ASCI); this is possible because the Habitats Directive implements the Bern Convention in the EU and, in order to provide all precautionary measures, Emerald sites are within the scope of the assessment.

The first step in BiH to establish Emerald sites was made in 2006 through the implementation of a CARDS/Emerald programme in the Western Balkans when seven sites in B&H were proposed. However, a big step forward was the World Wildlife Fund (WWF) project of the Mediterranean Programme Office (MedPO) *Living Heart of Europe* which was completed in 2011.

1.2.3 EU Directives

In May 1992 European Union governments adopted legislation designed to protect the most seriously threatened habitats and species across Europe. This legislation is called the Habitats Directive and complements the Birds Directive adopted in 1979. These directives protect around 1,200 animal and plant species and 230 habitat species in over 20% of the European Union's territory. At the heart of both these Directives is the creation of a network of sites called Natura 2000. The Birds Directive requires the establishment of Special Protection Areas (SPAs) for birds. The Habitats Directive similarly requires Special Areas of Conservation (SACs) to be designated for other species, and for habitats. Together, SPAs and SACs make up the Natura 2000 Network. All EU Member States contribute to the network of sites in a Europe-wide partnership. Each Member State must compile a list of the best wildlife areas containing the habitats and species listed in the Habitats Directive and the Birds Directive. For both types of sites it is the task of the Member State to put the necessary protection provisions/designations in place. Under the two directives the following types of sites are created.

The goal of Natura 2000 is to ensure the long-term survival and favourable conditions of the most valuable and endangered habitats and species. These objectives are achieved, inter alia, by aligning with the interests and well-being of the population living and carrying out activities in certain Natura 2000 sites.

Network areas are determined according to scientific criteria that are the same for all countries.

Article 6 (3) and (4) of the Habitats Directive which has been transposed into relevant FBiH legislation state the following:

- 'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.'
- 'If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.'

The EU has published a number of documents which provide guidance on the requirements of Appropriate Assessment, including *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites – Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (2002), which sets out the principles of how to approach decision making during the process and this have been followed as closely as possible. As this document states that it is necessary to first make a screening report of the project's impact on the area that may have a potential impact on the Natura 2000 area, it means that the emphasis for assessment should be objectively demonstrated, with supporting evidence that:

- There will be no significant effects on a Natura 2000 site (in our case a potential Natura 2000 site) - stage one: Screening; or
- There will be no adverse effects on the integrity of a Natura 2000 site (in our case potential Natura 2000 site) - Stage two: Appropriate assessment.

1.3 Approach to the Assignment

1.3.1 Stages of the AA Process

The AA process has four stages that need to be done if it is concluded that all four stages are necessary. If at any stage in the process it is determined that there will be no significant effect on any Natura 2000 site, the process is effectively completed. The four stages are as follows:

- Stage 1 – Screening - The process to identify the likely impacts of a project on a European site, either alone or in combination with other plans and

projects, and consider whether the impacts are likely to be significant in the absence of mitigation.

- Stage 2 – Appropriate Assessment of the Proposed Works; The consideration of the impacts on the integrity of the European site, wither alone or in combination with other plans and projects, with regard to the site's structure and function and its conservation objectives. Where there are adverse impacts, an assessment of mitigation options is carried out to determine adverse effect on the integrity of the site. If these mitigation options cannot avoid adverse effects then development consent can only be given if stages 3 and 4 are followed.
- Stage 3 – Assessment of alternative solutions - Examining alternative ways of achieving the objectives of the project to establish whether there are solutions that would avoid or have a lesser effect on European sites.; and
- Stage 4 – Imperative reasons of overriding public interest (IROPI) - Examining alternative ways of achieving the objective project to establish whether there are solutions that w or have a lesser effect on European sites.

Stages 1 and 2 relate to Article 6(3) of the Habitats Directive; and Stages 3 and 4 to Article 6(4).

1.3.2 The Assessment Approach

In BiH, the Habitats Directive does not apply and therefore there are no officially proclaimed Natura 2000 sites. Consequently, there are no formal *Qualifying Interests* or *Conservation Objectives* for the sites of European nature conservation interest. However, BiH ratified the Bern Convention and is obligated to protect candidate Emerald sites and assess any impacts that may occur in those area. Despite being required to comply, the Convention is not fully implemented in BiH. This means that directly applying the AA process is difficult. However, there are lists of species that are of concern registered within the potential Natura 2000 sites and candidate Emerald sites in the Standard Data Forms submitted upon nomination.

The objectives of an equivalent assessment applicable for potential Natura 2000/candidate Emerald sites are as follows:

- Establish the importance of the site in a wider EU context – list the justifications for the site's nomination as a potential Natura 2000/Emerald site and list the ecosystems and species important to this status. These ecosystems and species will be the *Qualifying Interests*.
- In the absence of Conservation Objectives for the sites, the objectives for the key species and habitats in a wider EU context should be established - they will form equivalent *Conservation Objectives* and can then be the basis upon which to assess the significance of impacts the Project will have on them.
- Determine whether the parts of the sites directly affected by the project support the 'Qualifying Interests' identified and how significant these areas are in the context of the site's interests.

- Determine whether the proposals will have any adverse effects on the integrity of the site.

These objectives were met through undertaking desk study and field survey to establish the baseline and then conducting the assessment. The findings are presented in the chapters below. The desk study sources, and detailed findings of field surveys are provided in the Annexes A-C.

The aim of the desk study was to understand the reason why these sites have been proposed and to identify key ecological components, elements, features that might be directly or indirectly impacted by the Project.

2 Appropriate Assessment Screening

2.1 Screening Methodology

The methodology and procedures of the European Commission's recommendations were followed. Biodiversity expert reports, impact assessment of the planned project and the state of preservation of potential Natura 2000 sites (whether there are existing settlements, roads, arable lands in potential Natura 2000 sites) were used to prepare this document and assess the magnitude of the impacts. This is the first stage of the Appropriate Assessment process, undertaken to determine the likelihood of significant impacts as a result of a proposed project or plan, in which case there is a need for a full Appropriate Assessment. If it can be concluded that no significant impacts to Natura 2000 sites are likely (or in this case other legally protected areas) then the assessment can stop here. If not, it must proceed to Stage 2 for further, more detailed assessment.

The AA Screening process that has been conducted can therefore be summarized as follows:

- determination of whether the project is directly affecting a potential Natura 2000 or candidate Emerald site;
- description of the proposed project that could potentially affect the identified sites,
- Identification of the potential impacts on potential Natura 2000/Emerald sites;
- Assessment of the significant of effects to the sites and establishing whether stage 2 is needed.

2.2 Project Description

This subproject includes three subsections between Konjic (Ovcari) and Mostar North along motorway Vc. According to the ToR, the subproject starts with the Konjic Intersection in Ovcari and ends with the Mostar North Interchange and the total length is 35.26 km, has six bridges and nine viaducts.

The motorway subsection Konjic (Ovcari) - Prenj Tunnel - Mostar North (Vrapcici) starts in settlement Ovcari with an interchange which will enable connection of the motorway and the existing main road M17. At the northern entrance to the City of Konjic, after the interchange, the motorway crosses the Sipad industrial zone. Further ahead, the subsection passes through the slopes where steep cuts are envisaged and where the Viaduct 3 over river Tresanica was designed to cross to the opposite side of the M17. Immediately after the end of Viaduct 3, the route enters the slope which passes through tunnels - Tunnel T1 and Tunnel T2.

After exiting the Tunnel T2, the route crosses over the Neretva River and the local road with Viaduct 4. Crossing to the opposite side, the motorway continues along the slopes at the rear of the settlement Bijela up to the settlement Mladeskovici, where the Konjic South interchange is positioned. Further on, the motorway route is laid at the foot of the slope above the settlements of Bijela and Gornja Bijela all the way to the end of the section. The route further runs along the slopes parallel to the Rakov Laz shooting range, continues through the uninhabited green landscape to the slopes of Prenj Mountain, where the tunnel under Prenj (Tunnel T3) begins and terminates in the territory of the City of Mostar.

After exiting the tunnel through the Prenj mountain, the motorway route traverses mountain curves towards the south and the City of Mostar, through a system of cuts and bridges through uninhabited mountain areas. At the exit from the Prenj mountain range, the road crosses the valley on 300 m long embankment and enter the Klenova Draga Tunnel (Tunnel T3A) on the western cliffs of the gorge.

After the Klenova Draga Tunnel the next viaduct of approx. 800 m begins and turns into approx. 640 m long Tunnel T4. The viaduct over Badnjena Draga near Seliste, which stretches parallel to the settlement begins here.

The route continues northeast of the settlement and extends along the edges of the hill north of Podgorani, where the bridge over Seocka Draga begins and leads the route to Dolac, north of Humlisani. Further, the route continues in a slight semicircle around the settlement of Humilisani along the slopes of Porim. Below Humilisani, the route runs south and under Sljemen, it enters the 2,200-meter-long Tunnel T5, and exits into the Kuti area, the point where the Mostar (north) exit ramp has been envisaged.

The south connection to main road M17 (hereinafter: Konjic Bypass) is also a subject of this ESIA. Konjic bypass will connect the motorway at Ovcari Interchange with the M17 to Jablanica. This bypass will allow for M17 traffic to access the motorway directly without entering the urban area of Konjic. Konjic Bypass begins by turning off the motorway via the Ovcari Interchange. After that, motorway passes the next 100 m in an embankment and reach the first 80-meter-long viaduct. After the viaduct, it enters an 800-meter-long tunnel. After exiting the tunnel, the route goes for approx. 500 m through embankments and another 500 m through a cut with the highest point of approx. 30 m. The next 200 m of the route passes through embankments and

cuts and reaches a 350-meter-long bridge that crosses the existing Sarajevo-Capljina railway, the Neretva River, and the main road M17. After 200 m, Konjic Bypass connects to M17.

2.2.1 Identification of Potential Area of Influence

The area of direct impact of the project covers an area of 206.05 ha and includes the motorway itself, embankments, cuts, access roads, service plateausand all other structures known at this stage of the Project that will cause habitat usurpation. This area will be permanently and irreversibly changed and is therefore assessed as an area that will be significantly affected.

As part of the development of the project tasks, it was previously determined that the area of impact of the project is the surrounding buffer zone of the motorway route where the greatest impact is expected. According to preliminary findings, the impact area covered a buffer zone of 500 m on both sides of the road, for most impacts. However, due to the specific nature of biodiversity receptors, further refinement based on biology of species was needed. The ecologically appropriate area of analysis (EAAA) is determined to include the "wider distribution of potentially affected biodiversity features and the ecological patterns, processes and functions that are necessary for maintaining them throughout this distribution"[6]. The project area of influence reflects ecological characteristics of the area and biology of found biodiversity features based on conducted field research, characteristics of surrounding habitats and ecosystems (e.g., habitat type, land use, natural barriers), literature data, known distribution and expert opinion for each individual species.

2.3 Identification of Sites of Interest

2.3.1 Natura 2000 Sites

Desk survey has shown that the planned motorway route passes directly through two potential Natura 2000 areas: Prenj-Cvrsnica-Cabulja (site code BA8300064), Zlatar (site code BA8300064) (Figure 1).Other potential Natura 2000 sites located in the vicinity of the project area are up to a maximum distance of 33 km. Additionally, Velez (site code BA7200088) Natura 2000 site is located 1 km east from the southernmost point of the route and Bjelasnica - Igman – Visocica – Treskavica (site code BA8300005) is 3 km away from the project area. It can be concluded that Velez (FBiH) and Bjelasnica – Igman – Visocica - Treskavica are outside of the area where potential impacts of the Project could be registered.

The potential Natura 2000 sites considered for this document are Prenj-Cvrsnica-Cabulja and Zlatar as they are in the direct impact zone of the motorway. No impact on the other potential Natura 2000 sites can be expected.

[6] EIB Guidance Note for Standard 3 on Biodiversity and Ecosystems, 2018

As a result of no proclamation or official recognition, management plans have not been developed for either of these sites.

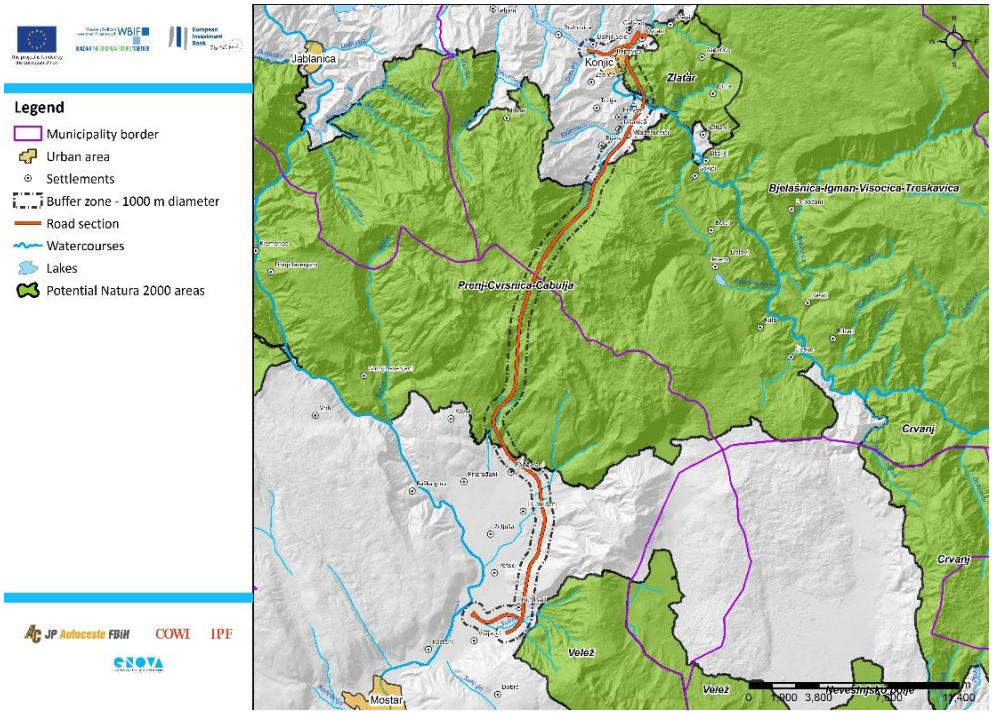

Figure 1: Position of potential Natura 2000 sites in relation to the project area

2.3.2 Emerald Network

Bosnia and Herzegovina has 29 candidate Emerald sites as of December 2021. Two of the proposed Emerald Sites are brought forward for further consideration as part of the Appropriate assessment for Corridor Vc subsection Konjic (Ovcari) –Prenj Tunnel - Mostar North: Zlatar (BA0000004) and the Canyon of river Konjicka Bijela (BA0000006) due to the planned motorway route going through these areas (Figure 2). Zlatar has the surface of 2,368.00 ha and the road is planned to cross the south-western corner in the form of a tunnel through the mountain thus minimizing the impact. Canyon of river Konjicka Bijela (3,300.00 ha) will be used as natural access to Mt. Prenj and approach to northern tunnel-entry point. Preservation of this canyon pre-entry into the Prenj Mountain is an important element which was also pointed out by the previous environmental impact study done in 2016.

The listed candidate Emerald sites are a part of this document due to the possibility of their official proclamation and subsequent inclusion in Natura 2000 network post-accession to the EU. They do not have any form of legal recognition. They are not protected areas and no management plans were developed nor implemented.

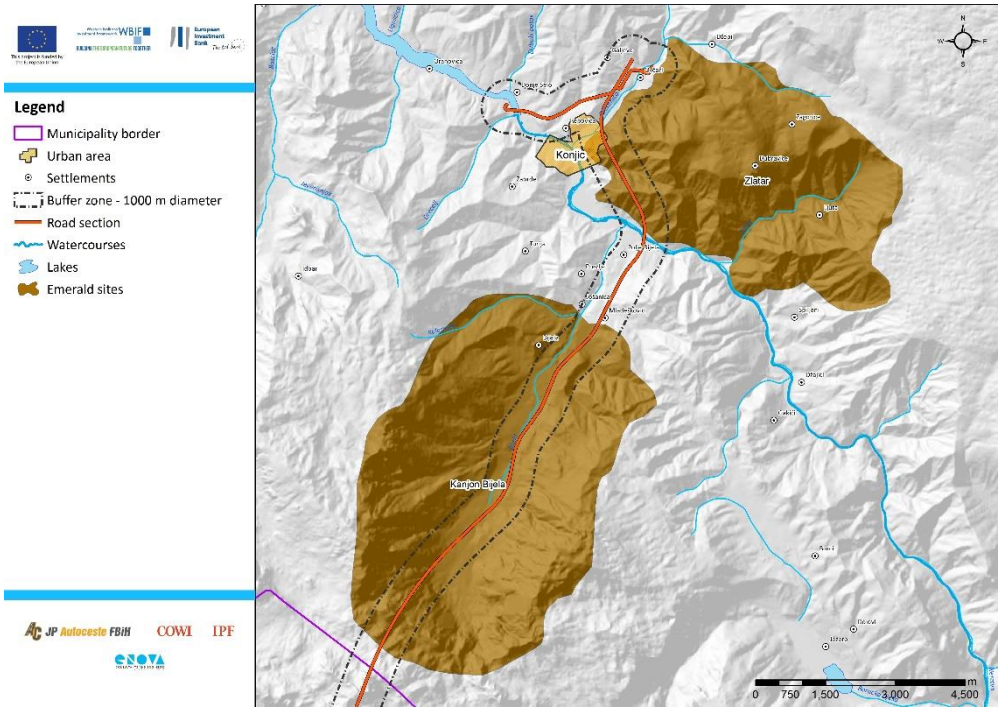

Figure 2: Candidate Emerald sites in relation to the motorway route

2.3.3 Description of the Natura 2000 Sites

Within this chapter, the potential Natura 2000 and candidate Emerald sites through which the section passes will be described based on the desktop study and field surveys. Areas will be described based on the biodiversity features for which they were proposed as Natura or Emerald sites with a complete description and list of habitats and species of importance. Conservation status for some habitat and species of proposed Natura 2000 sites were done on the basis of the information give in the Standard Data Form (SDF).

2.3.3.1 Prenj – Cvrsnica – Cabulja BA8300064

- Prenj-Cvrsnica-Cabulja is a proposed Natura 2000 site located in the Federation of Bosnia and Herzegovina, with a total surface of 97,097.63 ha. The area has a high value because it contains 20 habitat types and 42 Natura and BD I species. Listed habitat types are presented in the Table 1 below. Habitat types confirmed by the surveys within the potential Natura site are bolded.

Table 1: Habitats of importance for the proclamation of the potential Natura 2000 site Prenj - Cvrsnica - Cabulja

Habitat code	Habitat type	Conservation status

Habitat code	Habitat type	Conservation status
8310	Caves not open to the public	type B[7]
62A0	Eastern sub-Mediterranean dry grasslands *(Scorzoneratalia villosae)*	type B
4060	Alpine and Boreal heaths	type A
8210	Calcareous rocky slopes with chasmophytic vegetation	type A
8140	Eastern Mediterranean screes	type A
4070*	Bushes with *Pinus mugo* and *Rhododendron hirsutu*m (*Mugo Rhododendretum hirsuti*)	type B
6170	Alpine and subalpine calcareous grasslands	type A
3240	**Alpine rivers and their ligneous vegetation with *Salix elaeagnos****	**not estimated**
8120	Calcareous and calcshist screes of the montane to alpine levels *(Thlaspietea rotundifolii)*	not estimated
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels)	type B
91K0	Illyrian *Fagus sylvatica* forests *(Aremonio Fagion)*	type B
9530*	**(Sub) Mediterranean pine forests with endemic black pines***	**type A**
95A0	**High oro Mediterranean pine forests***	**type A**
91E0*	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno Padion, Alnionin canae, Salicion albae)*	type C
4080	Sub Arctic *Salix* spp. scrub	type B
5130	*Juniperus communis* formations on heaths or calcareous grasslands)	not estimated
9180*	*Tilio Acerion* forests of slopes, screes and ravines	type A
9140	Medio European subalpine beech woods with *Acer* and *Rumex arifolius*	not estimated
9250	*Quercus trojana* woods	not estimated
91R0	Dinaric dolomite Scots pine forests *(Genisto januensis Pinetum)*	not estimated

Of the 20 habitat types, seven habitats have outstanding conservation status (type A), six are of a good conservation status (type B), six habitats are not estimated and only one habitat has an C type conservation status, i.e., average or reduced conservation status. As the proposed Natura 2000 sites have not been adopted since 2014, when they were first proposed, no revision of habitat and species status has been done.

Three of the potentially present habitat types have been confirmed within the surveyed EAAA. No identified habitat types of concern will be under direct impact within the potential Natura 2000 site Prenj-Cabulja-Cvrsnica. The map

[7] conservation status **A**: outstanding conservation, **B**: good conservation, **C**: average or reduced conservation.

below shows the habitat types registered within the potential Natura 2000 site that are fully or partly within the Project EAAA (Figure 3).

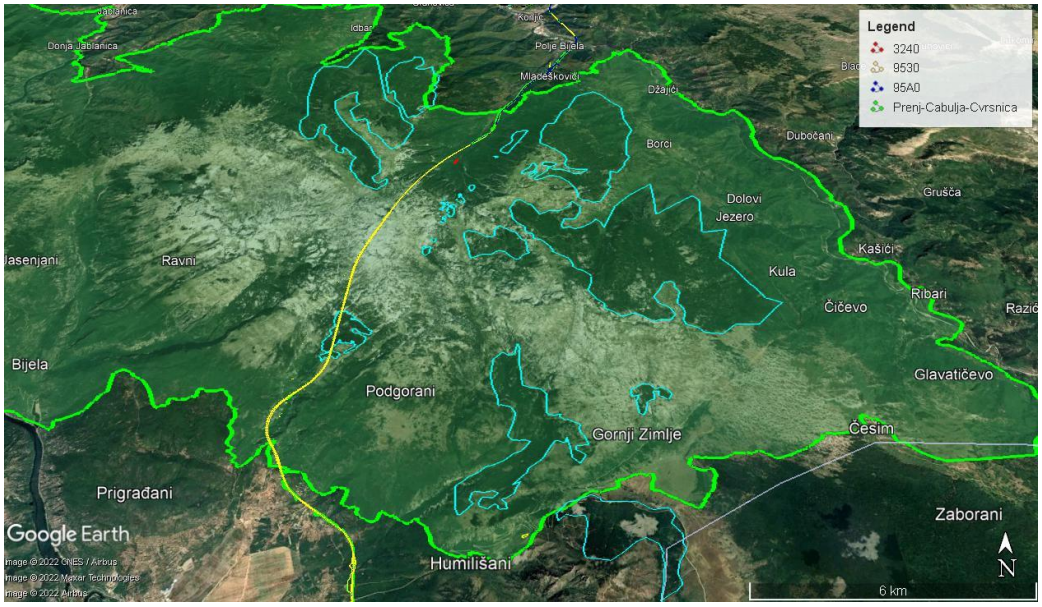

Figure 3: Confirmed habitat types of EU importance

As the habitats for which the whole area is nominated for a potential Natura 2000 site are listed here, the same applies to the potential Natura 2000 site Zlatar, it is important to emphasize that not all habitats were confirmed during field research. This is discussed in more detail in Chapter 3.4 Identified Natura habitats. Species recorded during the surveys are bolded in Table 2.

Table 2: Species of importance for Natura 2000 site Prenj-Cvrsnica-Cabulja

Group	Species code	Scientific name	Habitat and Bird Directive
M	6338	*Dinaromys bogdanovi*	x
M	1352	*Canis lupus*	II, IV, V
M	1371	*Rupicapra rupicapra balcanica*	V
M	1354	*Ursus arctos*	II, IV
M	1361	*Lynx lynx*	II, IV, V
I	**6199**	***Euplagia quadripunctaria***	**x**
I	1065	*Euphydryas aurinia*	x
I	1083	*Lucanus cervus*	II
I	**1089**	***Morimus funereus***	**II**
A	1193	*Bombina variegata*	II, IV
R	**1217**	***Testudo hermanni***	**II, IV**
R	1298	*Vipera ursinii*	II, IV
F	1107	*Salmo marmoratus*	II
F	**1163**	***Cottus gobio***	**II**

Group	Species code	Scientific name	Habitat and Bird Directive
F	1154	*Pomatoschistus canestrinii*	x
F	6339	*Salmothymus obtusirostris*	EN
F	6347	*Squalius svallize*	EN
B	A223	*Aegolius funereus*	BD I
B	A166	*Tringa glareola*	BD I
B	A108	*Tetrao urogallus*	BD I
B	A034	*Platalealeu corodia*	BD I
B	A241	*Picoides tridactylus*	BD I
B	A077	*Neophron percnopterus*	BD I
B	A246	*Lullula arborea*	BD I
B	**A338**	***Lanius collurio***	**BD I**
B	A339	*Lanius minor*	BD I
M	1355	*Lutra lutra*	II, IV
B	A092	*Hieraaetus pennatus*	BD I
B	A078	*Gyps fulvus*	BD I
B	A076	*Gypaetus barbatus*	BD I
B	A109	*Alectoris graeca*	BD I
B	A255	*Anthus campestris*	BD I
B	**A091**	***Aquila chrysaetos***	**BD I**
B	A104	*Bonasa bonasia*	BD I
B	A215	*Bubo bubo*	BD I
B	A224	*Caprimulgus europaeus*	BD I
B	A080	*Circaetus gallicus*	BD I
B	A084	*Circus pygargus*	BD I
B	A379	*Emberiza hortulana*	BD I
B	A101	*Falco biarmicus*	BD I
B	A103	*Falco peregrinus*	BD I
P	1419	*Botrychium simplex*	x
P	1473	*Aquilegia kitaibelii*	x
M	1305	*Rhinolophus euryale*	II, IV
M	**1304**	***Rhinolophus ferrumequinum***	**II, IV**
M	**1303**	***Rhinolophus hipposideros***	**II, IV**
M	1307	*Myotis blythii*	II, IV
M	1324	*Myotis myotis*	II, IV
M	1310	*Miniopterus schreibersii*	x
P	4072	*Cerastium dinaricum*	x
P	4101	*Scilla litardierei*	x

Group	Species code	Scientific name	Habitat and Bird Directive
P	6184	*Pulsatilla vulgaris* ssp. *grandis*	x
P	4089	*Arabis scopoliana*	x
P	4070	*Campanula serrata*	x
P	1604	*Eryngium alpinum*	x
P	1902	*Cypripedium calceolus*	x
I	1087	*Rosalia alpina*	II, IV
I	1088	*Cerambyx cerdo*	II, IV

Eight of the fauna species were confirmed to be present within the surveyed area. The reason for a low number of registered species being of conservation concern is that biodiversity features of highest value that trigger the Habitats/Birds Directive conservation activities and can justify proclamation of Natura 2000 sites are predominantly present at high altitudes of the Prenj Mountain. The flora and fauna at altitudes above 2,000 m asl is very valuable and represent *Qualifying interests* for conservation for the site. As the planned motorway will pass through the Mt. Prenj in the form of a tunnel and as the parts above ground are located within areas under some existing anthropogenic pressure, direct impacts on high-value features will be avoided.

2.3.3.2 Zlatar BA8200095

Zlatar is a proposed Natura 2000 site (it was also declared a candidate Emerald site of BiH), located in the Federation of Bosnia and Herzegovina with a total area of 2623.36 ha. Nine different habitat types and eleven Natura 2000 species have been described in this area.

List of species with the status of belonging to the Habitats Directive is provided below. These species have been identified as significant in the preliminary list for proposing Natura 2000 sites for BiH specifically site Zlatar.

Table 3: Habitats of importance for the proclamation of the potential Natura 2000 site Zlatar

Habitat code	Habitat type	Conservation status
62A0	**Eastern sub-Mediterranean dry grasslands *(Scorzoneratalia villosae)***	**type B**
4030	European dry heaths	**type C**
8210	Calcareous rocky slopes with chasmophytic vegetation	**type A**
6110	Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedionalbi*	**type C**
6210	**Seminatural dry grasslands and scrubland facies on calcareous substrates (*Festuco- Brometalia*)**	**type C**
6220	Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*	**type C**

Habitat code	Habitat type	Conservation status
91E0*	Alluvial forests with *Alnus glutinosa*and *Fraxinus excelsior (AlnoPadion, Alnionincanae, Salicionalbae)*	**type C**
9530*	**(Sub) Mediterranean pine forests with endemic black pines**	**type A**
91K0	Illyrian *Fagus sylvatica* forests *(Aremonio-Fagion)*	**type B**

Table 4: Species of importance for potential Natura 2000 site Zlatar

Group	Species code	Scientific name	Habitat Directive
M	1305	*Rhinolophus euryale*	II, IV
I	1092	*Austropotamobius pallipes*	II
I	6199	*Euplagia quadripunctaria*	II
F	6347	*Squalius svallize*	EN
F	6339	*Salmothymus (Salmo) obtusirostris*	EN
F	1163	*Cottus gobio*	II
F	1107	*Salmo marmoratus*	II
I	1083	*Lucanus cervus*	II
I	1065	*Euphydryas aurinia*	II
P	1473	*Aquilegia kitaibelii*	x
P	1902	*Cypripedium calceolus*	x

Three habitat types and no species listed for Zlatar were confirmed within the borders of the Natura 2000 site. The reason for such results may be that the motorway passes through the site along the southwestern margins, therefore the surveyed area of interest heavily gravitated towards the motorway and the marginal habitats. It is to be expected that species such as *Lucanus cervus* is present and numerous much deeper into the site. As such, the motorway will not cause any direct impact on the *Qualifying interests*. Indirect impact that may occur is disturbance caused by increased noise, vibration and light levels in construction phase that shall induce avoidance behaviour.

2.3.4 Description of Emerald Sites

The candidate Emerald sites Zlatar BA0000004 and Konjicka bijela BA0000006 are partly within the potential Natura 2000 sites identified during desk study. For candidate Emerald areas, only the information specified in the Table 8 can be found, but since these sites are part of the potential Natura 2000 sites, the lack of data for the candidate Emerald sites is compensated with the information available for the potential Natura 2000 sites and field research carried out by experts. All engaged experts are well acquainted with the area where the project is planned, an assessment of the condition of the populations and an

assessment of the impact of the project on the area of direct and indirect impact was done.

An important note regarding species listed in Standard Data Forms for candidate Emerald sites and a low number of confirmed species is that surveyed Emerald sites were first nominated in 2005 and the provided information can be considered out of date and unreliable. Additionally, it can be noticed that some listed species do not have suitable habitat within the site e.g. a number of wetland bird species are listed but they do not inhabit the area. It can be assumed extrapolation of data collected from other sites, unreliable literature sources or lack of detailed field surveys resulted in inaccuracies.

Table 5: Species of importance for candidate Emerald site Konjicka Bijela

Group	Code	Scientific name	Habitat and Bird Directive
B	A229	*Alcedo atthis*	I
B	A029	*Ardea purpurea*	I
B	A024	*Ardeola ralloides*	I
A	1193	*Bombina variegata*	II, IV
M	1352	*Canis lupus*	II, IV, V
I	1088	*Cerambyx cerdo*	II, IV
B	A031	*Ciconia ciconia*	I
B	A080	*Circaetus gallicus*	I
B	A081	*Circus aeruginosus*	I
F	1163	*Cottus gobio*	II
B	A027	*Egretta alba*	I
B	A026	*Egretta garzetta*	I
R	1279	*Elaphe quatuorlineata*	II, IV
R	1220	*Emys orbicularis*	II, IV
I	1065	*Euphydryas aurinia*	II
I	1052	*Euphydryas maturna*	x
B	A022	*Ixobrychus minutus*	I
I	1083	*Lucanus cervus*	II
I	1060	*Lycaena dispar*	II, IV
M	1310	*Miniopterus schreibersi*	II, IV
I	1089	*Morimus funereus*	II
M	1316	*Myotis capaccinii*	x
M	1324	*Myotis myotis*	II, IV
B	A023	*Nycticorax nycticorax*	I
I	1084	*Osmoderma eremita*	II, IV
M	1306	*Rhinolophus blasii*	II, IV
M	1305	*Rhinolophus euryale*	II, IV

Group	Code	Scientific name	Habitat and Bird Directive
M	**1304**	***Rhinolophus ferrumequinum***	**II, IV**
M	**1303**	***Rhinolophus hipposideros***	**II, IV**
F	1134	*Rhodeus sericeus amarus*	II
I	1087	*Rosalia alpina*	II
F	1107	*Salmo marmoratus*	II
R	1217	*Testudo hermanni*	II, IV
M	1354	*Ursus arctos*	II, IV

*Priority species; M-Mammal; F-fish; R-reptile; I-insect; B-bird; A-amphibian, **bold** - confirmed

Table 6: Species of importance listed for candidate Emerald site Zlatar

Group	Code	Scientific name	Habitat and Bird Directive
B	A229	*Alcedo atthis*	Annex I
P	1473	*Aquilegia kitaibelii*	x
B	A029	*Ardea purpurea*	Annex I
B	A024	*Ardeola ralloides*	Annex I
A	1193	*Bombina variegata*	II, IV
I	1088	*Cerambyx cerdo*	II, IV
B	A031	*Ciconia ciconia*	Annex I
B	A080	*Circaetus gallicus*	Annex I
B	A081	*Circus aeruginosus*	Annex I
F	1163	*Cottus gobio*	II
P	1902	*Cypripedium calceolus*	x
B	A026	*Egretta garzetta*	Annex I
R	1279	*Elaphe quatuorlineata*	II, IV
R	1220	*Emys orbicularis*	II, IV
I	1065	*Euphydryas aurinia*	II
I	1052	*Euphydryas maturna*	x
B	A022	*Ixobrychus minutus*	Annex I
I	1083	*Lucanus cervus*	II
I	1060	*Lycaena dispar*	II, IV
M	1310	*Miniopterus schreibersi*	II, IV
I	1089	*Morimus funereus*	II
M	1316	*Myotis capaccinii*	x
M	1324	*Myotis myotis*	II, IV
B	A023	*Nycticorax nycticorax*	Annex I
I	1084	*Osmoderma eremita*	II, IV

Group	Code	Scientific name	Habitat and Bird Directive
M	1306	*Rhinolophus blasii*	II, IVII, IV
M	1305	*Rhinolophus euryale*	x
M	**1304**	***Rhinolophus ferrumequinum***	**II, IV**
M	**1303**	***Rhinolophus hipposideros***	**II, IV**
R	1217	*Testudo hermanni*	II, IV
M	1354	*Ursus arctos*	II, IV

*Priority species; M-mammals; P-plants; I-insects; B-bird; A-amphibian; R-reptile, **bold** - confirmed

2.4 Identified Natura Habitats

Since the potential Natura 2000 sites Prenj - Cvrsnica - Cabulja and Zlatar have a large area and the project passes with bridges and roads only through a small part of the area in relation to the entire proposed area, a large number of recorded habitats were not identified during field research.

Features of Interest and Conservation Objectives of the Natura 2000 sites

The Features of Interest and Conservation Objectives (established based on explained methodology) of the two proposed Natura 2000 sites are given in Table 3 below. This information was obtained from the FMOIT[8] database on declaring Natura 2000 sites in BiH on provided their website[9].

Table 7: Features of interest and Conservation objectives for potential Natura 2000 sites within the 500 m buffer zone.

Natura 2000 sites	Distance from site	Features of Interest	Conservation objectives
Prenj – Čvrsnica – Čabulja **Site code BA8300064**	0 km*	20 habitat types were recorded in the proposal for nomination of the potential Natura 2000 sites, of which three habitats were singled out of special importance because they were marked as habitat types that can have a non-priority as well as a priority form: Habitat type (Annex I Habitat types): 9530 – (Sub-) Mediterranean pine forests with endemic black pines 91E0 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnionincanae, Salicionalbae);* 9180 - *Tilio-Acerion* forests of slopes, screes and ravines. 42 species of importance have been recorded in the site according to desk survey. The main quality and importance of this site are well preserved alpine ecosystems with natural processes in place. The most represented Natura 2000 habitat types in site are Alpine and subalpine calcareous grasslands, Eastern sub-mediteranean dry grasslands, Calcareous rocky slopes with chasmophytic vegetation. A full list of species and habitats can be found in the chapter **"Description of the Natura 2000 Sites"**	This area is proposed as type C (type of site) - both SPA (Special Protection Areas) and SCI (Sites of Community Importance). Prenj – Čvrsnica - Čabulja is not legally adopted as a Natura 2000 site. No procedure for the adoption of proposed Natura 2000 sites has been carried out.

[8]Federal Ministry of Environment and Tourism
[9]https://www.fmoit.gov.ba/bs/okolis/zastita-prirode/ekoloska-mreza-natura-2000

Natura 2000 sites	Distance from site	Features of Interest	Conservation objectives
Zlatar **Site code BA8200095**	0 km*	9 habitat types were recorded according to desk study, of which two habitats were singled out of special importance because they were marked as habitat types that can have a non-priority as well as a priority form: Habitat type (Annex I Habitat types): 91E0 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae);* 9530 - (Sub-)Mediterranean pine forests with endemic black pines The quality and importance of the site is connected to the well-preserved dolomitic vegetation. The most important Natura 2000 habitat types in site are Dinaric dolomite Scots pine forests, Calcareous rocky slopes with chasmophytic vegetation, Rupicolous calcareous or basophilic grasslands, Pseudo-steppe with grasses and annuals. 11 Natura 2000 species have been recorded in this site. A full list of species and habitats can be found in the chapter "Description of the Natura 2000 Sites"	This area is proposed as type B (type of site) – SCI (Sites of Community Importance). Zlatar is not legally adopted as a Natura 2000 site. No procedure for the adoption of proposed Natura 2000 sites has been carried out.

* Corridor Vc passes directly through the proposed Natura 2000 and Emerald site

Features of Interest and Conservation Objectives of the candidate Emerald networks

Table 8: Features of interest and Conservation objectives for candidate Emerald sites within the 500 m buffer zone.

Emerald sites	Distance from site	Features of Interest	Conservation objectives
Zlatar **Site code BA0000004**	0 km *	32 species od interest were described for this candidate site. Only species were recorded as the value of the area, no specific habitat types were recorded. Since Zlatar is also a	This area is proposed as type C. No further information was provided by the official website[10].For candidate Emerald sites for Bosnia and Hezegovina there are no listed

10 https://natura2000.eea.europa.eu/Emerald/SDF.aspx?site=BA0000004&release=3

Emerald sites	Distance from site	Features of Interest	Conservation objectives
		potential Natura 2000 site, Table 3 lists the habitats of importance.	conservation objectives aside from listed species that are provided in this table. Only species of interest are listed as values for their conservation. No other information was found.
Konjicka bijela** **Site code BA0000006**	0 km	34 species of interest were described for this candidate site. Only species were recorded as the value of the area, no specific habitat types were recorded. Since konjicka Bijela is part of the potential Natura 2000 site Prenj-Cvrsnica-Cabulja, Table 1 lists the parts of the habitats of importance.	This area is proposed as type C. No further information was provided by the official website[11]. Candidate Emerald sites for Bosnia and Herzegovina have no listed conservation objectives aside from listed species that are provided in this table. Only species of interest are listed as values for their conservation.

* Corridor Vc passes directly through the potential Natura 2000 and candidate Emerald site

** A large part of this area is included within the Natura 2000 proposed network Prenj - Cvrsnica - Cabulja

[11] https://natura2000.eea.europa.eu/Emerald/SDF.aspx?site=BA0000006&release=3#1

3 Assessment of Potential Impacts

3.1 Methodology

Assessment of impacts was performed based on methodology presented in the ESIA.

As shown in Table 2 a number of Annex I habitats and Annex II and IV species might potentially be adversely impacted by environmental change or deterioration as a consequence of the proposed project are identified in this assessment. In order to determine whether project will have any effects on the potential Natura 2000 sites or candidate Emerald sites, a connection between the source and a receptor through a pathway is searched for.

The planned project will provide a framework for the development of the main road of the motorway, bridges and tunnels, as well as access roads and Konjic bypass road. The exact path and location of bridges and tunnels with their lengths are provided ESIA.

It is possible that some parts of the roads and other planed infrastructures, particularly those involving the construction of bridges and tunnels, have a potential to result in both direct and indirect impacts on the potential Natura 2000 sites in terms of land-take within the site boundary; indirect changes that may result from changes in hydrology or water quality and range of other possible impacts.

3.2 Direct Impacts

This part of the AA is concerned with identifying those locations where there is a direct spatial overlap and therefore a likelihood of direct impacts on the potential Natura 2000 sites. The nature and significance of direct impacts on Natura 2000 sites vary from site to site and according to the development that is proposed. Examples of planned activities and their impacts include the following:

- Construction of access roads and the motorway,
- Disturbance of habitats and species,
- Habitat loss and fragmentation,
- Altered abiotic/site factors (e.g., through soil removal, compaction or erosion, water from planned activities).

A total of 9,653.42 ha may be indirectly affected in the construction phase and/or project operation phase have been assessed during the research of the habitat status before the start of project activities.

The total surveyed area that might be under (in)direct impact located within potential Natura 2000 sites is approx. 3,335 ha and in candidate Emerald sites 2,368 ha. It can be assumed that a large majority of that area will not be impacted due avoidance by tunnels. However, the wider area has been included as a precaution and to acquire a better understanding of potential impacts. The

area under direct permanent impact of the project in the potential Natura 2000 site Zlatar is 1.54 ha (short road segment between Tunnel T1 and Tunnel T2) and in the site Prenj-Cvrsnica-Cabulja 23.05 ha (road layout including embankments, disposal site will be created on the motorway footprint and the inert waste generated by construction of access roads to Prenj Tunnel and Prenj Tunnel itself will be used by Contractor for embankments, avoiding the need for additional disposal sites).

Regarding Emerald sites, area of the candidate Emerald site Zlatar to be under direct impact is 2.54 ha (1.54 ha – short road segment between Tunnels T1 and T2 and 1 ha - after southern portal of the Tunnel T2) and area of the candidate Emerald site Konjicka Bijela approx. 36 ha that will be under direct impact (31.3 ha by the construction of the road and approx. 4.7 ha by widening of existing roads for the purpose of using them as access roads).

The rest of the motorway will pass through these areas in the form of tunnels, avoiding biological values.

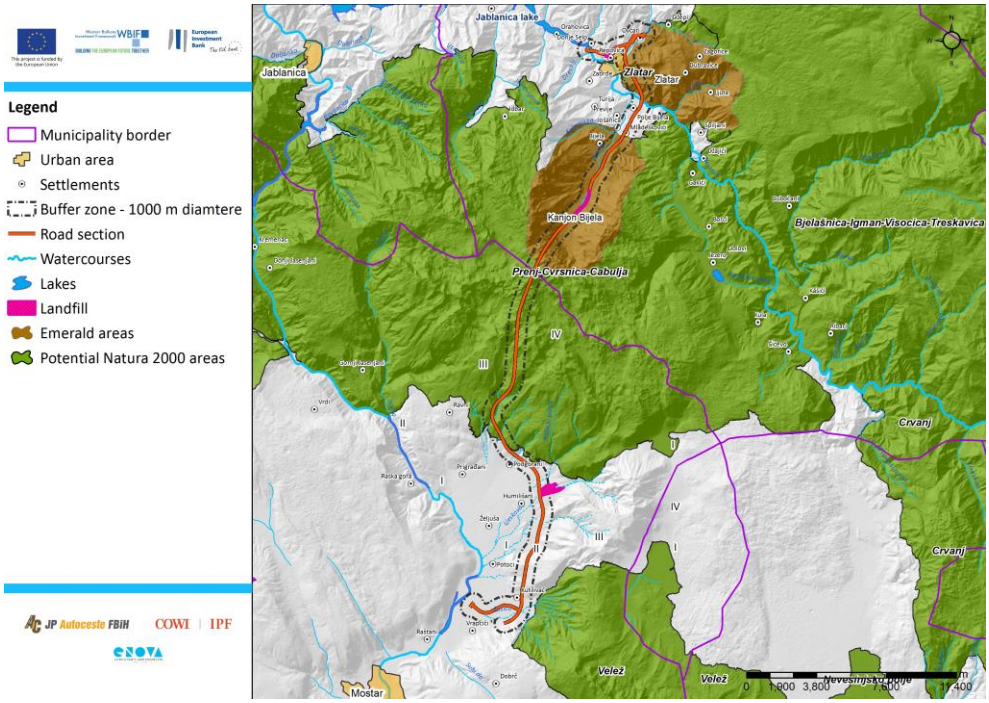

Figure 4: Position of areas of concern in relation to the motorway route and inert waste disposal sites

At the intersection with the motorway route, relocation and unhindered implementation of the existing road network below or above the motorway route is planned. A total of five local road deviations and two regional roads were designed. Local road 1 – the first planned local road passes through and interacts with a current local road in the settlement Polje Bijela located in the Prenj-Cvrsnica-Cabulja potential Natura 2000 site. The width of local and regional roads is adjusted to the width of existing roads and ranges from 3.5 to 6.6 m. Since the construction of local roads overlaps with the already existing access road sand local roads of the settlement, it is not anticipated that there

will be a significant impact from these planned project activities. However, widening might be needed on several access road sections and that was calculated under direct impact.

Another potential impact with some likelihood of significant effect is wastewater produced either from construction of roads or from tunnels and bridges. The water from the road is accepted in a controlled way, with a concrete gutter of 0.75 along the green belt and 0.50 meters along the stop lane, it is conducted to the drain, and then to the collector which is located in the dividing belt or sidewalk. The water from the collector is piped to the oily water purifier and then discharged into the recipient. Surface water from the surrounding terrain is led by peripheral trapezoidal or segmental concrete ditches to prefabricated reinforced concrete culverts and passes through the motorway hull. Leachate from the placenta is collected through drainage pipes and conducted to the outlet into the recipient, most often the manhole culvert.

3.3 Indirect Impacts

Details of the potential Natura 2000 sites where it is considered that there is a likelihood of indirect impacts occurring as a result of the proposals of the planned activities of the project Konjic – Mostar North Corridor Vc are presented in this chapter. Indirect impacts have been determined by examination of a number of factors including the spatial distance of the potential Natura 2000 site from the proposal; the sensitivity of the qualifying features of the site to various perturbations and the physical requirements of the site, particularly in terms of hydrology and water quality, and the potential for disturbance to fauna, which are amongst the most frequent pathways by which indirect impacts occur. Some examples of the consequences of typical indirect impacts are as follows:

- Altered species or habitat composition due to increased edge effects (a consequence of habitat fragmentation, for example) – Proposed indirect impact poses a risk for identified fauna, but combination with mitigation measures reduce the likelihood of a significant impact. This type of effect can occur mostly with invertebrate species where opening of forest habitats and large areas of marginal parts favour species tied to the forest edge.
- Reduced breeding success (e.g., due to disturbance, habitat loss, fragmentation, pollution) possibly resulting in reduced population viability.
- Air quality and climate change and impacts from greenhouse gas emissions reduction/increase – air quality is discussed in ESIA it is identified as an indirect impact but there is no likelihood of significant effect. Pollution in form of waste material either from chemicals or other objects already present near the route and in the radius of 500 m, show that the area was already under high anthropogenic influence (in Konjicka Bijela there is Igman- Konjic shooting range; Konjicka Bijela is a candidate Emerald site as well as part of the potential Natura 2000 site Prenj-Cvrsnica-Cabulja).
- Runoff of pollutants during construction and operational phase of development resulting in impacts to surface water and groundwater and the species they support. The Authority does not foresee any indirect impacts arising out of the Integrated Implementation Plan which are of significance.

3.4 Likelihood of Significant Effects

From the analysis of effects on all eight Natura 2000 sites in addition to an examination of likely changes as a consequence of the proposed project, it was concluded that there is no conceivable likelihood that the proposed project will impact upon the integrity of the potential Natura 2000 sites (Prenj – Cvrsnica – Cabulja and Zlatar) and candidate Emerald sites (Zlatar and Konjicka bijela) through which the motorway route passes. There will be no cumulative effects with the construction of auxiliary roads, tunnels, viaducts and other supporting infrastructure needed to complete the project. Therefore, there is no likelihood of significant effects on the integrity of potential Natura 2000 and candidate Emerald sites, effects listed in this document. However, it can be concluded that the impacts with a potential of a slight and controlled (through mitigation measures) significant effect may occur. Direct impact on motorway footprint is unavoidable. Such impacts will be discussed in document Appropriate assessment stage 2.

3.5 Screening Conclusion

The potential effects on the Annex II species and Annex I habitats and their conservation statuses as a consequence of the proposed project were examined in order to determine if, based on the uncertainty, likelihood or certainty of significant effects, the assessment of this proposed project should proceed to a full Appropriate Assessment.

Screening has concluded that impacts are possible and due to precautionary measures, appropriate assessment will move on to stage 2: appropriate assessment. This decision was based on potential for loss, reduction or fragmentation of Annex I habitat area, potential disturbance, loss or fragmentation or reduction of Annex II species density and / or their habitats from noise, emissions and excavation works which are elements of the proposed project.

The possible impacts that might arise from the draft plan have been examined in the context of a number of factors that could potentially affect the integrity of the Natura 2000 sites. All of the sites of interest identified in the zone of direct impact will be taken forward to Stage 2 Appropriate Assessment as the potential impact cannot be excluded in the screening stage.

4 Appropriate Assessment

At Stage 2 Appropriate Assessment, the impact of a project alone and in combination with other projects or plans on the integrity of the Natura 2000 site is considered with respect to the conservation objectives of the site and to its structure and function. Essentially then, the appropriate assessment examines the implications for the site in view of the site's conservation objectives, once it has been concluded that the potential for significant effects are certain, likely or uncertain. Adopting the precautionary principle in this case, significant effects have been described as uncertain.

4.1 Potential Impacts and Likelihood of Significant Effects

The screening report for Stage 2 Appropriate Assessment presents details of all of the potential Natura 2000 sites within the area of influence of the planned project. The Table 7 and Table 8 of the Stage 1 Appropriate Assessment Screening report contain details such as features of interest, conservation objectives and the distance of the potential Natura 2000 and candidate Emerald sites.

The 2001 European Commission AA guidance outlines the following potential changes that may occur at a designated site, which may result in effects on the integrity and function of that site:

- Loss/reduction of habitat area- Habitat loss in potential Natura 2000 sites occurs in slope areas of the Prenj and Zlatar mountains, and in the peripheral area in the proposed Natura 2000 sites far beyond the priority habitats. Primarily, habitat loss refers to: 1. permanent changes for the needs of motorway construction; and 2. temporary habitat loss due to backfilling of excavated material (excavation landfills to be formed by tunnel construction);

- Habitat or species fragmentation – likelihood of slight significant impact;

- Disturbance to key species – Key species referred to species of conservation concern registered in the Project area within the sites of interest, as well as species known to inhabit the sites that were confirmed on field. The key species identified in this area are not narrowly distributed and the project will preserve habitat continuity. Permanent effects can be light pollution that can lead to bat aggregation. When it comes to carnivores, bears and wolves will be most affected, but mitigation measures are sufficient to ensure the continuity of habitats and passages used by wildlife. Due to a longer period of construction, it is possible to temporarily interrupt the movement of game. As for the survival of amphibians and reptiles, there are no permanent water bodies in the area of impact. There will be no

destruction of amphibian breeding grounds. It is necessary to secure the corridor from the entrance of the turtle in the lowland parts of the route - *Testudo hermanni.* The Tresanica, Bijela and Neretva rivers are potential habitats for *Cottus gobio* - Bullhead; *Squalius svallize* - Adriatic dace, construction activities are regulated by water permit and good practice*;*

- Changes in key indicators of conservation value (water quality etc.)- likelihood of slight significant impact.

The available information on the two proposed Natura 2000 sites within a 2 km radius within the potential zone of influence has been reviewed to determine whether project activities such as deforestation and fragmentation of marked habitat areas have a significant impact on their features of interest. The potential for impacts and likelihood of significant effects on the features of interest identified in this report is based on information collated from the desk study, the nature of the project, site visits and the detailed information provided by flora and habitat experts through 2020 and 2021. The two Emerald sites identified in the project's impact zone are: Zlatar and Konjicka Bijela. Both emerald sites are included in the coverage area of the proposed Natura 2000 sites, so the values of the proposed sites also apply to the two Emerald sites. The likelihood of impacts occurring are established in light of the type and scale of the proposed development, the location of the proposed development with respect to Natura 2000 sites and the features of interest of the Natura 2000 sites.

This document has been prepared following expert assessment and identification of impacts with the magnitude of the impacts on habitats and the species that inhabit it. Environmental impact assessment is performed based on the criteria for determining the magnitude of the impact which describes the nature, physical extent and duration of the impact and sensitivity of the receptor which represents the extent to which a particular receptor is more or less susceptible to a given impact. Potential impacts can be divided into two categories: direct and indirect impact.

Direct impacts refer to habitat loss or fragmentation arising from land-take requirements for the development of auxiliary roads during the construction of the motorway. Direct impacts can be a result of change in land use or management, such an impact can occur during excavation and disposal at various locations, excavation of earth for road construction and drainage pipes. The main direct impacts on flora, vegetation and habitat during the construction of the motorway are the felling and removal of vegetation cover in the areas through which the motorway passes, as well as at construction site and material storage sites.

Indirect and secondary forms of impact do not have a straight-line path between cause and effect. It is more difficult to identify all possible indirect effects that may occur during the course of the activity. It is difficult to identify all the indirect effects that can occur during the various phases of the motorway construction. Such (indirect) effects can occur during the deforestation of the

area in order to carry out the activities of the motorway construction phase, and as an indirect effect there is the settlement of invasive species. Expected direct impacts on identified habitats are planned tunnels and bridges. Expected indirect impacts on the flora can be: damage to vegetation caused by various agents that can contribute to an increase in the number of foreign invasive species The introduction of invasive species can also be defined as an indirect impact. Disturbance of different species inhabiting the habitat can occur as a result of habitat fragmentation (such as the disturbance of speleological objects - identified in the habitat or objects where bat colonies are present – roosting colonies) or indirectly through noise, vibration caused by machines or interference caused by light pollution.

During field research conducted by experts on flora and fauna various impacts were identified and the magnitude of these impacts on habitats and species was assessed. The impacts will be described in detail in the next chapter.

5 Identification of Impacts

During the development of the motorway route, the Project has sought to avoid, minimise and mitigate impacts on biodiversity and where this is not possible and significant residual impacts remain, compensation has been applied. The measures obligatory for the JPAC and Contractor are given in the BMP.

Within the proposed route of the motorway there are different types of ecosystems, which is why it is necessary to pay attention to the specifics of the impacts on each of the ecosystems depending on its composition and structure, as well as the current state and management of specific ecosystems. Particularly endangered are the ecosystems of cliffs, rock crevices where the largest number of endemic and endangered plant species and communities are located as well as identified Annex II and I species and Annex I habitats. These ecosystems are outside of the direct impact zone.

5.1 Habitat Loss

Habitat loss can result from clearance, conversion of the original habitat to a new habitat type, modification of an existing habitat (changing its ecological functions) or degradation of a habitat to a point where it is of low quality and can be considered lost. Loss of habitats can also result in habitat changing in such a way that it becomes incapable of supporting species requirements; it may also be a catalyst for other associated impacts namely habitat fragmentation, direct and indirect loss of species and species disturbance and displacement.

As the main direct impact on habitats and species in the phases of pre-construction and construction, loss of habitat along the subsection Ovcari - Prenj will be done for the construction of auxiliary roads and the main part of the project - construction of tunnels through Prenj and Zlatar. Significant portion of sub-section Ovcari-Prenj and Zlatar is designed through the mentioned planned

protected area via tunnel passing through Mt. Prenj, thus minimizing adverse impacts. Tunnel will also enter the mountain at a lower altitude of approx. 620 m asl, preserving sensitive and valuable habitats and species mainly limited to higher altitudes. Consequences represent physical loss of following plant communities: White hornbeam forests (Carpinetum orientalis), Pubescent Oak-hornbeam forests (Querco-Ostryetum carpinifolia and Orno-Osryetum), Beech Forest (Fagetum montanum), Thermophilic beech forests (Seslerio-Fagetum, Ostryo-Fagetum and Aceriobtusati-Fagetum), Black hornbeam forests (Pinetum-nigrae) as well as increased loss of geological base - dolomite and its erosion, especially in the localities Zlatar and mountain Prenj. Indirect deforestation pressure is the spread of invasive species.

The construction of tunnels in the protected areas Vrtaljica - Zlatar and Prenj can lead to possible hydrogeological disturbances, which has a direct impact on flora and vegetation.

During field research several fish of conservation importance were recorded in rivers Neretva, Tresanica and Salakovac (*Cottus gobio* - Bern Convention (Annex III) and EC Habitats Directive Annex II, *Squalius svallize*- Bern Convention (Annex III), *Cobitis narentana*- IUCN Red List Status: Vulnerable (VU)). During the construction of the bridge M1 of the river Tresanica and M2 of the river Neretva, the structure of the ecosystem and the coast will be disturbed and water turbidity may occur, which would affect the population of fish recorded downstream. As the presence of invasive species in these localities has been recorded, it is necessary to take measures to prevent the prevalence of invasive species (Rainbow trout, Prussian carp, Pike-perch, Pumpkinseed). California trout could very easily dominate and suppress native fish species. Precisely because of this, preventive measures have been taken to determine water quality at four sites where the M1 and M2 bridges are being built. The following information on quality analysis is taken from the ESIA study (chapter ???).

Based on the results of physico-chemical analyses of the surface waters, in samples SP1, SP2 and SP4 all tested parameters are below limit values stipulated by the *Regulation on Hazardous and Harmful Substances in Waters and the Decree on the Classification of Waters and Coastal Seas of Yugoslavia within borders of SR BiH* and meet the criteria for surface waters of class I and II.

5.2 Habitat Fragmentation

Habitat fragmentation is mainly a product of habitat loss and involves isolation of one fragment of habitat to another, separation of a larger habitat into smaller fragments, increase in the edge to interior habitat size ratio, and decrease in the average size of remaining fragments. The effect of such fragmentation directly impacts the distribution of floral and faunal species. Fauna, while mobile, may be affected through limitations imposed on their movement range which can lead to crowding effects (reduced territory size), increased competition, reduced gene flow and eventual reduced breeding success and possibly survivorship.

Displacement and disturbance of species may occur more commonly due to reduced presence of refuge areas in remaining fragments where species are protected from noise and visual stimuli. Associated secondary impacts include edge effects where species originally located in the interior of a habitat parcel are consequently exposed to the edge of the remaining parcel.

During the construction, there will be a direct minor physical loss of habitat due to work on the preparation of the construction site. Primarily habitat fragmentation will happen through the motorway fencing and due to road construction.

Habitat fragmentation will occur in part due to tunnel construction, however compared to the total habitat area estimated for potential Natura 2000 sites the impact is negligible. The indirect effect of fragmentation is to prevent the movement of species due to burial in the ground and the emergence of burials into which important species (reptiles and amphibians recorded in the habitat) can fall. Also, the movement of game will be limited. It is important to mention the area is not important for mammal migrations.

Direct loss of species occurs where a species is removed from its habitat as a consequence of a particular activity such as hunting, harvesting and translocation. Indirect loss occurs when individuals of a species are lost as a consequence of prey depletion, reduction in habitat viability for feeding or breeding, increased competition and introduction of invasive species. Flora species will be directly affected from working strip preparation, road construction and construction of facilities mainly through vegetation removal. Direct loss of fauna species will generally be associated with macrofauna and will result mostly from equipment movements, earth moving and removal of vegetation. Further limited loss of species (which may include mammals and birds) may also result from accidental strikes with vehicles on access roads to and from construction sites, camps and yards. Species may also be indirectly affected through increased hunting or harvesting during or after the construction phase due to improved road access to previously inaccessible areas.

5.3 Disturbance of Fauna

Disturbance mainly relates to fauna species and will result from visual, light, noise and vibration emissions produced from project activities and facilities. Species disturbed by such impacts may lead to behavioural changes such as reduced breeding/ foraging time and duration, selection of breeding/ foraging sites, etc. Visual and noise factors may cause avoidance behaviour where fauna species steer clear of areas with vehicle, infrastructure and personnel presence and level of noise generated. Increased lighting in areas where construction is conducted at night and due to increased vehicle and personnel movements may also contribute to avoidance behaviour especially for nocturnal species or during periods where species are more sensitive to disturbances (e.g., breeding season). Disturbance is considered to be temporary and limited to the construction period although where the factors are permanently established

(i.e., visual, light and noise from permanent facilities and roads, barrier effect, edge effect) they may be considered to be permanent.

5.4 Mitigation

Detailed mitigation and an Environmental and Social Management Plan (ESMP) have been developed as part of the ESIA (Chapter 19) and a Biodiversity Mitigation Plan (BMP) has been included. For further detailed outline on these measures and plans the ESIA should be referred to. As part of this AA it has been assumed that measures outlined as mitigation and within the ESMP have been followed and that the likely impacts that will occur as a result of the Project are only those residual impacts presented within the main ESIA document.

It is important to highlight that BMP envisages preparation of biodiversity-related plans. Biodiversity Offsetting Plan (BOP), Land and Habitat Restoration Plan (LHRP) and Invasive Species Management Plan (ISMP) must be developed as a part of the CESMP. LHRP and BOMP recommendations and requirements are provided in the BMP.

One of the key outcomes of the BOP is the work to be undertaken on the formal establishment of an ecological network in order to compensate for residual impacts caused by unavoidable habitat loss on motorway footprint. It is to be done through meetings and workshops that must highlight the threat current status quo on designation of Emerald and Natura 2000 sites represents to nature protection in BiH. JPAC will be assigned with the obligation to organiye meetings with stakeholders from the Government of FBiH and identify possible roadmaps toward sites recognition and proclamation.

6 Conclusion

In BiH, the Habitats Directive does not apply and therefore there are no officially proclaimed Natura 2000 sites. Consequently, there are no formal *Qualifying Interests* or *Conservation Objectives* for the sites of European nature conservation interest. This means that directly applying the AA process is very difficult. However, there are lists of species that are of concern registered within those potential Natura 2000 sites identified by the aforementioned project. Confirmed species from said lists and other registered species were used for evaluating impacts.

Impacts on the sites of interest could not be excluded with certainty in the screening phase therefore appropriate assessment was done. The assessment established there will be direct unavoidable impact on the Konjicka Bijela and Prenj sites (they significantly overlap), while the impacts will be avoided in the Zlatar site. Proposed avoidance and mitigation will mitigate the impact. The BMP stipulated development of three plans pertaining to biodiversity and this document.

Biodiversity Offsetting Plan, Land and Restoration Plan and Invasive Species Management Plan are to be in the construction phase. With application of all given measures, residual impacts will remain, especially in the Konjicka Bijela/Prenj sites. As compensational measures, afforestation and support to proclamation of a protected area are planned. As a part of offsetting measures, JPAC is to support the official designation of ecological network in FBiH.