

ADRIATIC METALS BH D.O.O. VAREŠ

PROJECT VAREŠ - POLYMETALLIC MINE

BIODIVERSITY ACTION PLAN

February 2024

This document has been developed/ revised as indicated below and described in the audit trail on the next page. Please destroy all previous revisions.

Audit	Date	Authors	Reviewed	Site
1.0	21/10/21	Wardell Armsrtrong	Šefket Goletić & Vildana Mahmutović	33
2.0	21/12/22	Prof. Dr. Šefket Goletić	Vildana Mahmutović & Danira Zanović	33
3.0	15/02/24	Prof. Dr. Šefket Goletić	Vildana Mahmutović & Danira Zanović	29

Audit	Status	Date	Update/Modification Details
2.1	Figure 1: Layout of the Vareš project	21/12/22	New Vareš Project map due to the relocation of the road route from Zagarski potok to the regional road Vareš Majdan - Tisovci
2.1	Table 1.1. Biodiversity Action Plan - Key Actions	21/12/22	<p>Key actions in the Biodiversity Action Plan have been revised:</p> <p>BIO.01/BIO.03 - The need to identify an area for a new wetland habitat and the restoration of a nearby stream/river has been excluded.</p> <p>BIO.04/BIO.08 - Increased area for restorative forest management by 15% and mountain meadows by 20%.</p> <p>BIO.09 - The need for a new area to restore hydrophilic vegetation of tall greens has been excluded, due to the relocation of the road.</p> <p>BIO.10 - Added/included 4 more PBF types (FBiH-VU).</p> <p>BIO.11 - Added/included 2 more bird species (FBiH-VU).</p> <p>BIO.13 - The transfer station has been relocated from the Droškovac location south to the former Vareš Majdan railway station.</p>
2.1	6.1. BIO.01 - Insurance of net gain for amphibians referred to in Annex IV	21/12/22	<p>The need to identify an area for a new wetland habitat has been ruled out, due to the relocation of the road route outside Zagarski Potok.</p> <p>Avoidance/mitigation measures are described.</p>
2.1	6.3. BIO.03 - Provision of minimum LV watercourses of the PBF	21/12/22	The need for restoration management of the nearby stream/river has been excluded, due to the relocation of the road route from Zagarski Potok. Avoidance/mitigation measures are described.
2.1	6.4. BIO.04 - Provision of minimum NNL PBF of acidophilic spruce forest	21/12/22	Increased the area of restoration forest management by 15%, included a map of the shift area, and added a plan for the restoration management (RM) of the spruce forest on an area of 115 ha.
2.1	6.8. BIO.08 - Provision of minimum NNL PBF of mountain meadows	21/12/22	Increased the area of restoration management of mountain meadows by 20%, included a map of the displacement area, and added a plan for restorative management (RM) on an area of 6ha.
2.1	6.9. BIO.09 - Provision of mini-small NNL PBF hydrophilic vegetation of tall greens	21/12/22	The need to identify an area (about 1.5 ha) for the restoration of hydrophilic vegetation of tall greenery has been excluded, due to the relocation of the road route to a greater distance - avoidance and mitigation measures.
2.1	6.10. BIO.10 - Provision of minimum nnl of Balkan	21/12/22	4 more national plant species from the category of early species (FBiH-VU) have been added/included, for which, in addition to

	endemic and nationally endangered plants		the other 8 Balkan endemic and nationally endangered plants, measures are planned to ensure minimum nnl and long-term net profit.
2.1	6.11. BIO.11 - Insurance of minimum NNL PBF Hazelnut, partridge	21/12/22	2 more nationally endangered bird species from the category of early species (FBIH-VU) have been added/included, for which, as well as for the hazel grouse, the necessary measures to ensure minimum LPLs are planned.
2.1	6.13. BIO.13 - Avoidance of effects on IUCN EN bat species listed in Appendix IV	21/12/22	The transfer station was relocated from the location of Droškovac to the former railway station Vareš Majdan, which avoided the impact on shelters and residences of the Communist Party and potential places of hibernation.
3.1	3.1.2. Project overview	15/02/24	The project also includes the location of the "Red Rocks" tailings landfill and a new map of the appearance of the Vareš project (Figure 1).
3.1	6.10. BIO.10 - Provision of minimum nnl of Balkan endemic and nationally endangered plants (Table 5.1)	15/02/24	Two species of rare orchids were included, which were subsequently found in the habitat of hydrophilic vegetation of tall greens (marsh pear and Transylvanian spotted orchid), for which, as well as for other endangered plant species, measures are planned to ensure minimum nnl and long-term net profit.

IT IS ISSUED FOR: Design Construction Operations Other _____

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847/21 of 21.10.2021

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1 INTRODUCTION

This Biodiversity Action Plan (BAP) is in line with the recommendations from the Impact Assessment (Chapter 5.4), part of the Environmental and Social Action Plan (ESIA), for the Vareš Project of Adriatic Metals BH d.o.o. Vareš in Bosnia and Herzegovina (referred as the "Project"). BAP is a key component of the project's Environmental and Social Management System (ESMS) and will be managed and coordinated by the Head of Sustainability.

Within the BAP, the framework for specific measures needed to adequately address the impact on biodiversity priority values resulting from project activities is presented in detail. This document is required to demonstrate the project's compliance with the European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR6) on Biodiversity (including national and international laws), in terms of Biodiversity Priority Characteristics (PBF) and Critical Habitat Areas (ACH) or qualified species for any of these areas.

The BAP extends to the Biodiversity - related Special Avoidance and Mitigation Measures listed in Chapter 5.4 Impact Assessment, to be taken before, during and after the implementation of the Project, together with responsibilities, timeframes and monitoring requirements. The general avoidance and mitigation measures listed in Table 5.4.10 of the Impact Assessment chapter are not discussed in detail here.

The BAP is a "living" document and is expected to be developed and improved as necessary during the detailed design phase, early works, construction, operations and decommissioning. For this reason, the BAP is being revised to align the design solutions with the requirements for avoiding and mitigating the impact on the priority values of biodiversity. For monitoring, there is an expectation that this will be carried out regularly (annually, and more often if necessary) for the first five years with a review after five years. At this time, monitoring may be reduced or increased as necessary to achieve the objectives of the BAP, and to avoid and mitigate the impact on biodiversity.

Adriatic Metals BH d.o.o. has full responsibility for the implementation of measures and the achievement of the goals stated in this BAP.

To achieve several actions and objectives from this Biodiversity Action Plan, it is necessary to carry out consultations with the local community, the local Forestry of Zenica-Doboj Canton Zavidovići, the fishing society, local/national institutions for environmental protection, and the Ministry of Agriculture, Water Management and Forestry of Zenica-Doboj Canton and the Ministry of Physical Planning, Transport and Communications and Environmental Protection of ZDK, including institutions responsible for the Protected Nature Conservation Plan. Landscape Konjuh and other protected areas and areas that are planned to be placed under protection, local non-governmental organizations/groups dealing with the protection of the environment, natural and cultural heritage, the Federal Ministry of Environment and Tourism and other participants.

2 REGULATORY FRAMEWORKS

Projects financed by the EBRD are designed to be managed by good international practices related to sustainable development. The biodiversity-relevant PR is EBRD PR6, which aims to:

- Protection and conservation of biodiversity through the application of precautionary and preventive approaches;
- Applying a hierarchy of mitigation measures with the aim that there is no net loss of biodiversity and, where appropriate, no net gain of biodiversity; and
- Application of Good International Practice (GIIP) in the Sustainable Management and Use of Natural Resources

This Plan provides a method for achieving compliance with the objectives of EBRD FP6.

3 PROJECT DESCRIPTION

3.1.1 Project location and setup

The project is located in the municipality of Vareš, Zenica-Doboj Canton, Bosnia and Herzegovina. The Rupice ore deposit is located near the border of the neighboring municipality of Kakanj. The project consists of the polymetallic deposit Rupice and the Tisovci processing plant, as well as the "Red Rocks" tailings landfill and 24.5 kilometers of transport road connecting these locations. The location of the Rupice mine is located 8.7 km west-northwest, or 3.5 km east of the city of Vareš. The Vareš project is about a 50-minute drive from the capital of Bosnia and Herzegovina, Sarajevo.

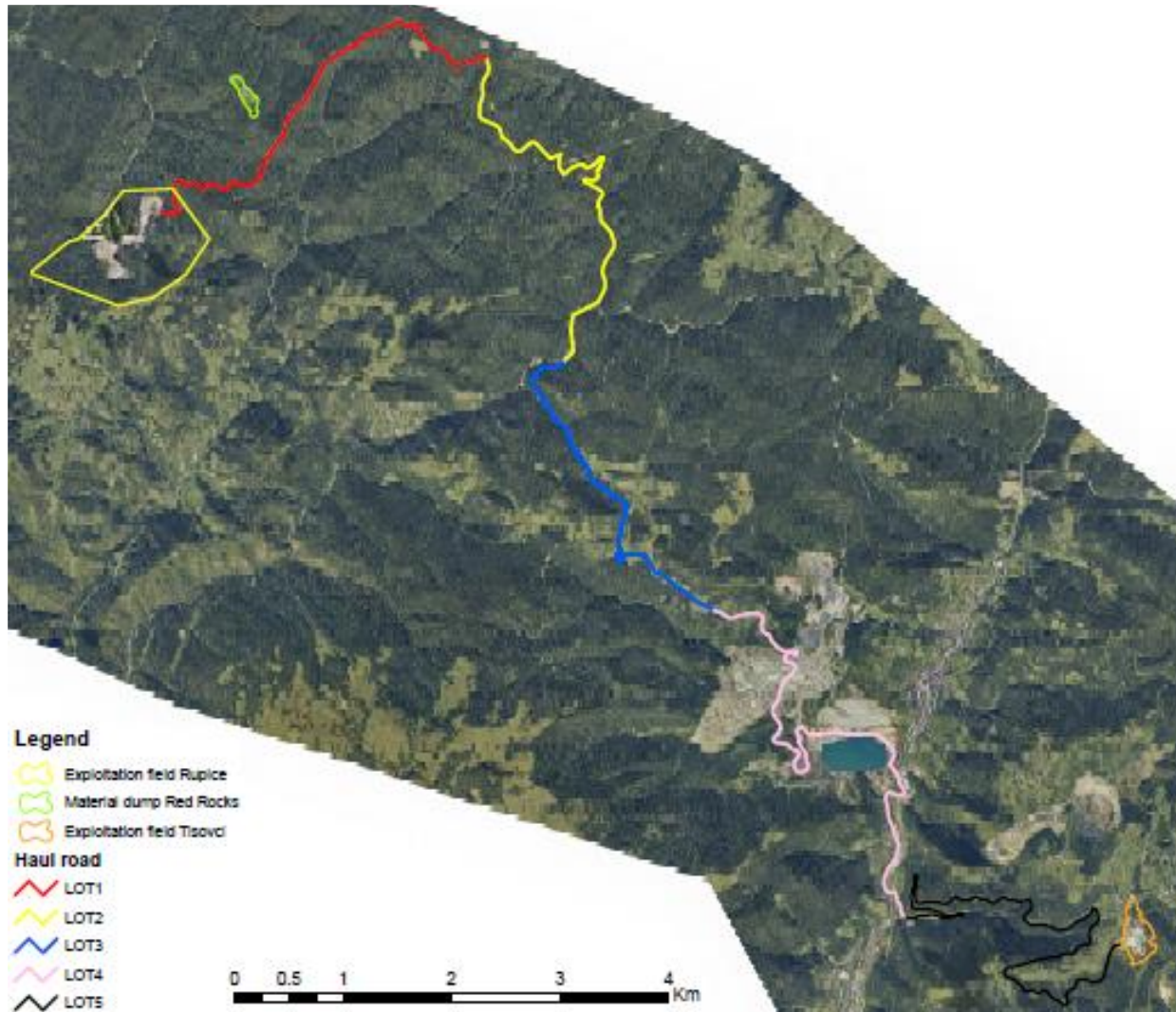
Access to the concession area, i.e. the project locations, consists of a series of asphalt roads that start from the A1 motorway in Podlugovi, through the regional road R444, Podlugovi - Breza - Vareš to the project locations in the municipality of Vareš. The railway line passes through the valleys in the surrounding area, from Podlugovo to Vareš, and the ore processing plant at the Tisovci location can be reached by a road that is connected to the railway line in Vareš.

The Rupice mine and the infrastructure are located within a steep wooded valley, on land owned and managed by the Public Company "Forest Management Company of Zenica-Doboj Canton" Zavidovići. The transport route from the Rupice mine site to the Tisovci VPP site passes through a combination of forest land, using existing forest and local roads where possible, as well as some parts of grassland/meadows. The ore processing plant is located on a plateau (projected platform) high on the edge of the valley at the Tisovci site and on land that was used for ore processing during the previous mining period (1990s).

3.1.2 Project overview

The project largely consists of an underground polymetallic ore deposit at the Rupice site and a plant for ore processing at the Tisovci location and a purpose-built transport road Rupice - Tisovci 24.5 km long for the transport of ore from the Rupice mine to VPP Tisovci and tailings back to the Rupice site for the purpose of using it to fill the pit. Waste rock from the construction of the pit will be disposed of in Rupice before being used as part of the process of filling the abandoned parts of the pit. Unused

tailings will be stored in a dry landfill, designed to meet capacity requirements throughout the life of the mine, located immediately south of the ore processing plant. Unused tailings from the construction of the transport road will be stored at the "Red Rocks" landfill. The final lead-silver and zinc concentrates will be transported to the railway station for loading at the Vareš Majdan site, and then further for refining and sale. The project's plan is on Display 1.



Display 1: Vareš Project Plan

4 BASIS AND IMPACT ASSESSMENT

The baseline values and the impact assessment of the project considered an Ecologically Suitable Area of Analysis (EAAA)¹ for each habitat, species or group of species, in particular for "priority biodiversity

¹ The level of distribution of landscape characteristics that requires research, taking into account the ecological patterns, processes, and functions that are required to support that characteristic.

characteristics" and "critical habitat areas". "Biodiversity Priority Characteristics" (PBF)² includes the following guidelines taken directly from Table 1. Guideline for FP6³ 2020:

Criterion	A priority feature of biodiversity	Critical habitat
1. Priority ecosystems		
<i>Endangered ecosystems</i>	(PR6 para. 12-i)	(PR6 para. 14-i)
(a) Habitats listed in Annex 1 EU Habitats Directive (EU member states only) or Resolution 4 of the Berne Convention (signatory countries only)	(a) EAAA is a habitat type listed in Annex 1. EU Habitats Directive or Resolution 4 of the Berne Convention	(a) EAAA is a habitat type listed in Annex 1. EU Habitats Directive is designated as a 'priority habitat type'
(b) IUCN Red List EN or CR Ecosystems	(b) EAAA**<5 % of the global extent of the ecosystem type with IUCN, CR or EN status	(b) EAAA ≥5 global scope of ecosystem type with IUCN, CR or EN status
		(c) The EAAA is an ecosystem that has been identified as a high priority for conservation by national systemic conservation planning
2. Priority species and their habitats		
<i>Endangered species</i>	(PR6 para. 12-ii)	(PR6 para. 14-ii)
(a) Species and their habitats listed in the EU Habitats Directive and the Birds Directive (EU Member States only) or the Berne Convention (signatory countries only)	(a) EAAA for the species and their habitats listed in Annex II. Habitats Directive, Annex I of the Birds Directive or Resolution 6 of the Berne Convention	(a) EAAA for the species and their habitats listed in Annex IV. Habitats Directive (see EU restrictions)
(b) IUCN Red List EN or CR Ecosystems	(b) EAAA supports <0.5% of the global population or <5 reproductive units of CR or EN species.	(b) EAAA supports ≥ 0.5% of the global population and ≥ 5% of CR or EN species reproductive units
(c) IUCN Red List of VU species	(c) EAAA Supported VU Types	(c) The EAAA shall support the globally significant population of VU species necessary to prevent a change in IUCN Red List status to EN or CR and shall meet threshold (b)
(d) At national or regional level (e.g. Europe), the types of EN or CR listed	(d) EAAA for EN or CR species that occur regularly at national or regional level	(d) EAAA for important concentrations of nationally or regionally listed EN or CR species
<i>Range-limited species</i>	(PR6 para. 12-ii)	(PR6 para. 14-iii)
	(a) EAAA for species with a limited range	(a) The EAAA regularly holds ≥10% of the global population and ≥10 reproductive units of the species***
<i>Migratory and Congregational Species</i>	(PR6 para. 12-ii)	(PR6 para. 14-iv)
	(a) EAAA identified under the Birds Directive or recognized by a national or international process as important for migratory birds (e.g. wetlands)	(a) The EAAA maintains a cyclical or otherwise regular, ≥1% of the global population at any point in the species' lifespan
		(b) The EAAA predictably supports ≥10% of the total population during periods of environmental stress

² Biodiversity priority characteristics are a subset of biodiversity that is particularly irreplaceable or vulnerable, but at a lower priority level than critical habitats.

³ Guideline 6: Conservation of biodiversity and sustainable management of living natural resources (d. 1 January 2020). September 10, 2020

*Quantitative thresholds derived from IUCN Key Biodiversity Area standards and aligned with International Finance Corporation (IFC) Guidelines 6 (rev. 2019)

**EAAA = *environmentally sound area of analysis*, as defined above

The IUCN Key Biodiversity Areas standard specifies the following definition for a reproductive unit: "the minimum number and combination of mature individuals required to initiate a successful reproductive event at a given site. Examples of five reproductive units include five pairs, five females reproducing in a single harem, and five reproductive individuals of a plant species.

A preliminary assessment and extensive site surveys have been carried out to gather all the necessary information for this Biodiversity Action Plan (BAP). Preliminary and field assessments were conducted by the University of Zenica, the Kemal Kapetanovic Institute in Zenica (Zenica Institute), and supervised by Wardell Armstrong International (WAI).

The work team included searches for:

- Legally protected nature conservation areas within the theoretical zone of impact of the project and areas internationally recognized as having high biodiversity, including potential Natura 2000 sites, biosphere reserves, key biodiversity areas, Global 200 ecoregions, bird endemic areas, important bird areas and areas listed in the national "Biodiversity Conservation Strategy and Plan of Bosnia and Herzegovina (2015-2020)";
- Species that are protected in Bosnia and Herzegovina or on the "Red List" in Bosnia and Herzegovina under the EU Habitats Directive (EU Habitats Directive 92/43/EEC) and the Birds Directive (Council Directive 79/409/EEC);
- Species or subspecies considered by experts to be endangered, declining or endemic in Bosnia and Herzegovina or the region (Balkans);
- Critical habitat areas as defined in EBRD PR6;
- Species that could suggest or encourage the presence of a critical habitat in accordance with PR6. This includes species listed by the International Union for Conservation of Nature (IUCN) as endangered or critically endangered globally and Europeanly, as well as species that meet other criteria specified in performance standards; and
- Habitats or ecosystems that may be associated with key evolutionary processes or are associated with ecological functions that are essential for maintaining the variability of biodiversity characteristics (described as critical habitat characteristics), defined in PR6.

Subsequent field research was based on a preliminary study and assessment of the habitat. Field studies for different habitats and species that were identified as likely to affect the project were carried out between 2019 and 2022.

The results of the ecological baselines and the impact assessment are discussed in detail in chapters 405 and 504 respectively of the ESIA. The Impact Assessment identified several characteristics that require specific avoidance, mitigation or displacement and compensation measures, which are the subject of the Biodiversity Action Plan (BAP).

5. SUMMARY OF KEY ACTIONS

This BAP allows the project to meet the requirements of PR6 within an acceptable timeframe as provided for in PR6, paragraph 6, as stated above.

In July 2021, Natural England (NE), the government's nature advisor in England, launched a new tool to measure the net profit of biodiversity at development sites. PR6 does not require the use of a separate calculation tool and as such to communicate net profit/loss calculations, the calculation tool (Biodiversity Metric 3.0 - Calculation Tool) has been used as the latest tool used in England. This tool is used to ⁴estimate the baseline of biodiversity and the predicted value of habitats after development (see Appendix 1).

The existing habitat areas and their condition were taken from the basic information from the survey, and the areas were measured by GIS.

Regarding the fit of local habitats in the table intended for British ecosystems, the "best fit" in terms of the type and condition of forest areas was used. The summary is given below in the Figure Display 2.

⁴ Biodiversity Metric 3.0 3.0 updates and replaces the beta Biodiversity Metric 2.0 (JP029) released in 2019. Biodiversity Metric 3.0 is a biodiversity accounting tool that can be used to calculate the net profit of biodiversity.

Osnovna terenska ispitivanja	<i>Broj staništa</i>	344.52
	<i>Broj stabala</i>	0.00
	<i>Rijeke</i>	16.08
Teren nakon intervencije (uključujući očuvanje staništa, stvaranje i poboljšanje)	<i>Broj staništa</i>	110.41
	<i>Broj stabala</i>	0.00
	<i>Rijeke</i>	0.00
Neto razlika terena % (uključujući očuvanje staništa, stvaranje i poboljšanje)	<i>Broj staništa</i>	-67.95%
	<i>Broj stabala</i>	0.00%
	<i>Rijeke</i>	0.00%
Područje van terena	<i>Broj staništa</i>	493.90
	<i>Broj stabala</i>	0.00
	<i>Rijeke</i>	40.00
Područje nakon intervencije (uključujući očuvanje staništa, stvaranje i poboljšanje)	<i>Broj staništa</i>	956.61
	<i>Broj stabala</i>	0.00
	<i>Rijeke</i>	56.61
Ukupna neto razlika (uključujući terensko i vanterensko očuvanje staništa, stvaranje i poboljšanje)	<i>Broj staništa</i>	228.60
	<i>Broj stabala</i>	0.00
	<i>Rijeke</i>	0.53
Ukupna neto razlika na terenu % plus višak s područja van terena (uključujući terensko i vanterensko očuvanje staništa, stvaranje i poboljšanje)	<i>Broj staništa</i>	66.35%
	<i>Broj stabala</i>	0.00%
	<i>Rijeke</i>	3.32%

Display 2: Summary of biodiversity metrics

In the Table 5.1 Below, the characteristics of PBF/ACH that require special measures are summarized, which are then described in more detail.

Table 5.1 Biodiversity Action Plan - Key Actions

I.D	Ecological receptor	Summary of activities	Rationale for action	Time
BIO.01	<p>Amphibians that breed along the Hot Stream and the Trstionica River downstream of the mouth of the Hot Stream and along the Small River (Annex IV of the species):</p> <ul style="list-style-type: none"> -Yellow Flycatcher -Green frog -Greece frog -Nimble frog 	<p>Wastewater management and performance in accordance with the ARRT (Avoid, Reduce, Restore/Regenerate, Transform) framework in order to avoid, mitigate and minimize the impact on PBF Amphibians and minimize net losses, and ensure net gain for the duration of the project, including:</p> <ul style="list-style-type: none"> - Supervision and maintenance of amphibian ponds and ponds in wetlands in the project impact zone; - Translocation from the endangered zone to a suitable site of the same habitat; - Prevention of runoff of polluted wastewater into watercourses; - Installation and maintenance of wastewater treatment plants for the purpose of their recovery and prevention of impact on the hydrological and ecological conditions of the watercourses into which they are discharged and which constitute the habitat of PBF amphibians; - Monitoring the quality of effluents in order to verify the impact on the environment and the effects of the measures taken; - Supervision of undertaking and implementation of wastewater and waste management measures; - Monitoring of PBF amphibians every quarter in the construction phase and at least once a year in the operational phase for the next five years, including breeding activity by engaging an appropriately qualified ecologist (SQE). 	<p>Species listed in Annex IV are triggers of critical habitat and therefore there can be no demonstrable impact on the populations of species within the EAAA, i.e. in the area of impact of the project (excluding net losses).</p>	<p>Prior to the implementation of project activities, it is mandatory to include in the project all project solutions related to the protection of PBF watercourses and amphibians, and in the construction phase, it is mandatory to take appropriate protection measures in order to minimize net losses.</p> <p>Also, in the operational phase, it is mandatory to undertake and implement all measures and activities related to the protection of PBF watercourses and habitats of PBF amphibians in order to minimize net losses and ensure net profit during the duration of the project.</p> <p>Monitoring of PBF amphibians in the construction phase should be carried out quarterly, and in the operational phase at least once a year for the next five years.</p>
BIO.02	<p>Invertebrates of Annex II, IUCN-EN White-footed Crustaceans (PBF) Annex</p>	<p>Construction of sedimentation tanks to intercept and prevent leakage from the construction site that would contaminate the Small River during the construction phase. The sedimentation</p>	<p>Annex II and IUCN-EN are PBFs. In accordance with PR6, the project must not show a net</p>	<p>Before the construction of any part of the VPP at the Tisovci location, appropriate measures</p>

Table 5.1 Biodiversity Action Plan - Key Actions

I.D	Ecological receptor	Summary of activities	Rationale for action	Time
	II, IUCN-DD; Stone crayfish	tanks must be built to allow sediment and pollution to be captured and treated before entering the Small River. Wastewater management in accordance with the ARRRT framework in order to avoid, mitigate and minimize the impact on PBF Invertebrates and minimize net losses, i.e. No net losses	loss or, ideally, a long-term net gain of the PBF	will be in force that can prevent runoff into the Small River. Taking wastewater management measures in accordance with the ARRRT framework.
BIO.03	PBF watercourses from the plain to the montane belt (Annex I. Habitat): - Hot Creek - Mala Rijeka - Bukovica River - Borovički potok	Construction of settling tanks to intercept and prevent them from entering the construction site into watercourses during construction. Sedimentation tanks must be constructed in such a way as to enable the capture and treatment of sediments and pollutants before entering watercourses in order to prevent them from affecting the environmental conditions of these watercourses. Wastewater management in accordance with the ARRRT framework in order to avoid, mitigate and minimize the impact on PBF watercourses so that the project does not cause changes and disturbances in these watercourses in the operational phase.	According to PR6, the project must not show a net loss or ideally a net profit of PBF in the long run. As these PBF watercourses are in the area of impact, appropriate avoidance/prevention and mitigation/minimisation measures are necessary as the project must not show a net loss.	Before the execution of works, it is mandatory to include in the project measures related to the protection of PBF watercourses, which must be taken in the construction phase. Also, in the operational phase, it is imperative to take and implement all measures related to the protection of PBF watercourses.
BIO.04	Priority Biodiversity Characteristics (PBF) of Spruce Forests (Annex I. Habitat)	Signing of an agreement with the local Forestry Service to initiate and carry out restorative management (RM) of the area of retained degraded forest north and east of the Rupice mine site in order to improve the value of biodiversity, including, but not limited to, selective logging, forced veteranization of some trees, creation of periodic clearings suitable for natural regeneration, etc. The proposed area for the RM is of 115 ha of degraded spruce forest so that the net profit can be in terms of habitat quality combined with site restoration. The base area and buffer area to be established with the base area is approx. 75% of the total area to provide>NNL. A nursery for the supply of locally	In accordance with PR6, the project must show in the long run that there is no net loss or ideally has a net profit of PBF. Relocation must be done before any impact from tree felling and soil disturbance occurs.	An area of existing spruce forest of poor condition located near the Rupice mine site (north and east of the Rupice mine site, to ensure connectivity with the forest habitat to the north and east) has been identified as suitable for restoration and restorative management in cooperation with the Zenica-Doboj Canton Forest

Table 5.1 Biodiversity Action Plan - Key Actions				
I.D	Ecological receptor	Summary of activities	Rationale for action	Time
		indigenous trees, shrubs and flora for the regeneration of degraded forests will be established/financed from the project. To monitor the success of the restoration in accordance with the Restoration Management Plan of the degraded forest in order to compensate for the loss of biodiversity in the habitat of acidophilic spruce forests caused by the implementation of the project.		Management Company, in order to compensate for losses and to be able to achieve the RM requirements specified in BAP BIO.04 (bottom).
BIO.05	Invasive species -Japanese courtier	Identify, fence and treat the Japanese Yard (JK) before it has the opportunity to expand as a result of project activities. Japanese knotweed can be treated by applying herbicides by trained personnel or some other environmentally appropriate method in order to eradicate it. Identified plants will require repeated treatment. Monitor the treated areas and signs of the emergence of new plants in the project areas in order to take measures to prevent the spread.	PR6 requires that invasive species be considered and treated as needed. JK can spread through small living fragments of the plant that become entrenched and cause adverse effects on important habitats, especially wet areas where it can spread rapidly.	Prior to any possible impact of invasive species, including the transport route.
BIO.06	Any potential receptor	Ecological monitoring of the project areas by SQE and nearby buffer/transition areas in order to determine and ensure that priority biodiversity characteristics that require special or additional avoidance and/or mitigation have not been identified from the initial surveys immediately before the start of the project activities.	Some potentially priority biodiversity features or species that trigger critical habitat are mobile and may have colonized project areas since basic research was conducted.	Just before any clearing of vegetation, soil disturbance and the implementation of project activities within the project areas.
BIO.07	Reptiles (Appendix IV species): - Viper snake - Wall lizard - Blind	Careful removal of potential refugia according to the recommendations and under the supervision of SQE immediately before clearing the soil and carrying out project activities. Mowing the lawn at a height of 150 mm, removing the remaining ones, and then leaving for at least 3 days at a suitable	Annex IV species are critical habitat drivers and therefore there can be no demonstrable impact on their populations within the EAAA (i.e. local populations) in the long term.	Vegetation should be shortened and removed during the active period of the reptile as much as possible before the start of work and kept mowed (the active period of reptiles is usually from

Table 5.1 Biodiversity Action Plan - Key Actions				
I.D	Ecological receptor	Summary of activities	Rationale for action	Time
	<ul style="list-style-type: none"> - Green Lizard - Green Lizard - Sand Lizard - Smooth Snake - Slender 	<p>time to allow the reptiles to disperse to the nearby habitat in order to minimize losses.</p> <p>Leaving logs and forest waste in the retained habitat to provide resting places and shelter for reptiles, wherever possible.</p>	<p>No project area is likely to be more than an intermittent or transient habitat for these reptile species, but individual individuals may be affected during vegetation removal and soil clearance.</p>	<p>April to October in sunny weather, and may depend on the local climate). Careful removal of potential refugia to be completed immediately before and during any vegetation clearance or soil removal.).</p>
BIO.08	<p>PBF Mountain meadows of the mower - will be permanently lost due to the construction of a freight road</p>	<p>Identify (at least 5ha) species-rich grasslands – existing mountain meadows that are currently being lost due to natural vegetation succession or negatively affected by agricultural practices, or species-poor areas of grassland that can be restored. Private plots in the area of the village of Semizova Ponikva would be better and a clear proof of commitment to biodiversity.</p> <p>The location for the restorative management of the meadows will be agreed in agreement with the Zenica Institute and depending on the availability of land for the proposed restoration and restorative management.</p> <p>There are areas that remain in the vicinity of the transport road in the area of the village of Semizova Ponikva that have been identified as suitable for the restoration management of the habitat of mountain meadows.</p>	<p>According to PR6, the project must show that there is no net loss or ideally that it has a net profit of PBF. Before disturbing the impact soil occurs, offsets should be set. The offsets should be placed before any impact on the ground.</p> <p>This habitat is also located directly adjacent to the proposed freight road and is susceptible to residual runoff, dust, and nitrogen deposition from trucks that cannot be 100% mitigated.</p>	<p>The area was identified so that mountain meadow management measures were established before the construction of a freight road passing through this habitat in the area of the village of Semizova Ponikva (Figure 1; Lot-3).</p>
BIO.09	<p>PBF Hydrophilic vegetation of tall greens (Annex I. Habitat)</p>	<p>This habitat is located near the planned route of the freight road north of the village of Semizova Ponikva and is spread over an area of approximately 1.5 ha, along a small stream that sinks on the border of meadows with spruce forests.</p> <p>Given that the habitat of hydrophilic vegetation of tall greenery is very sensitive to changes in ecological conditions and that it</p>	<p>In accordance with PR6, the project should show that there is no net loss or ideally that it has a net profit of PBF for the duration of the project.</p>	<p>Immediately before any project activities on the construction of the freight road and during the duration of the project, it is necessary to establish management measures for the</p>

Table 5.1 Biodiversity Action Plan - Key Actions

I.D	Ecological receptor	Summary of activities	Rationale for action	Time
		<p>supports species that classify critical habitat (marsh marigold) and priority features of biodiversity (angelica, yellow carousel, etc.) and that it is exposed to possible indirect impacts of the construction and use of the transport road, it is necessary to ensure the management of measures for the protection of this habitat and the monitoring of the condition and changes in its structure in accordance with the management and control plan in order to Maintaining the existing natural potential of biodiversity without any net loss.</p>	<p>This habitat is located in the vicinity of the proposed transport road and is therefore exposed to the indirect negative impacts of potential hydrological disturbances due to the construction of the road, the remaining runoff from the road and dust and nitrogen emissions from trucks.</p>	<p>protection of the habitat of hydrophilic vegetation of tall greenery in order to avoid negative impacts on this habitat so that there is no net loss in this habitat under the influence of the construction and use of the transport road.</p>
BIO.10	<p>(PBF as a precaution) Balkan endemics or FBiH, CR, EN or VU plant species: - Swamp marigold (FBiH-CR), - Pančić's jelly (FBiH-VU), - Red Headband (FBiH-VU) - Long-leaf head (VU), - Anđelika (FBiH-VU), - Kohov Gentian (FBiH-VU), - Blue Forest (FBiH-VU), - Yellow Carousel (FBiH-VU), - Yellow Sedge (FBiH-VU), - White Headband (FBiH-NT), - White udder (FBiH-NT), - Hairy goldfinch (NT), - Marsh Pears (LC),</p>	<p>The restorative management of spruce forests, mountain meadows and hydrophilic vegetation of tall greenery in accordance with a specially developed action plan will ensure the key mitigation of the negative impacts of project activities and the improvement of ecological conditions necessary for the maintenance and increase of local populations of these plant species, as they are treated as PBF due to their unfavourable conservation status in the region or endemism in the Balkans.</p> <p>Additional measure: Before removing vegetation and clearing the soil, SQE will identify and translocate individuals of these species from endangered areas to suitable sites in retained habitats and habitats identified for restorative management within the EAAA through field surveillance during the growing season.</p> <p>The populations of these plant species should be monitored periodically, every year, during the spring-summer season,</p>	<p>According to PR6, the project must demonstrate that there is no net loss or ideally that it has a net profit of PBF for the duration of the project.</p> <p>The species are preventively treated as PBF due to their unfavorable conservation status in the region or endemism in the Balkans.</p>	<p>Determine the SQE that must be present before and during the clearance of vegetation/soil and that must translocate these plants if they are identified/found in areas to be cleared, i.e. located in the risk zone in order to avoid and mitigate negative impacts so that the project does not show a net loss.</p>

Table 5.1 Biodiversity Action Plan - Key Actions				
I.D	Ecological receptor	Summary of activities	Rationale for action	Time
	<ul style="list-style-type: none"> - Transylvanian spotted orchid (LC), - Dinaric shrimp - endemic, - Bristlesnake – endemic to the Balkans 	and conservation measures should be taken to ensure that they are established over several seasons.		
BIO.11	Annex I Birds (PBF): Hazelnut/Partridge (<i>Bonasa bonasia</i>) and nationally vulnerable species (FBiH VU).	<p>Avoiding clearing vegetation during the mating season if possible. If not, the project ecologist will check suitable nesting habitats and protect all active nests until the end of nesting.</p> <p>The proposed spruce forest area for restorative management (RM) in BIO.04 will benefit this species in the long term in order to support local populations.</p>	An Annex I bird species that is PBF. According to PR6, the project must show that there is no net loss or, in the long run, that it has a net profit of PBF. This and some other PBF bird species are threatened by habitat loss, poor forest management, and climate change.	Inspection of the nest immediately before clearing vegetation by the SQE if done during the mating season (including March to August)
BIO.12	Annex IV Large mammals (qualified species of ACH): <ul style="list-style-type: none"> - Brown bear - Gray wolf - Eurasian lynx - European wildcat 	<p>Culverts will be placed along the route of the road where it passes through the wooded landscape from Rupice to Semizova Ponikva.</p> <p>A speed limit will be introduced on the freight road, and appropriate signage will be installed along the road to inform drivers of the potential presence of large mammals, especially at night. Useful management of retained forest away from the freight road will be designed to benefit these species through increased coverage, availability of pit/shelter sites, and feeding</p>	Annex IV species are drivers of critical habitat and therefore there must be no demonstrable impact of the project activities on the populations of these species within the EAAA (i.e. local populations) in the long term.	<p>The speed limit and signaling should be set before the truck uses the transport route for the first time.</p> <p>Briefings and waste regulations should be established at the beginning of project activities.</p>

Table 5.1 Biodiversity Action Plan - Key Actions

I.D	Ecological receptor	Summary of activities	Rationale for action	Time
		<p>resources. Adaptive management can be used if monitoring identifies regular road crossings for large mammals.</p> <p>Proper disposal of food waste, especially in the Rupice (more distant) project area, will ensure that bears are not attracted to work areas where they might interact with staff. Construction site staff will receive instructions on how to dispose of garbage and how to behave if they spot these species.</p> <p>Remote camera monitoring of potential mammal crossings along the freight road by SQE, as well as the sites of Šajnovički kamen and Grčki kamen, in order to establish use by large mammals and to notify of any ongoing mitigations if their regular road crossing is found.</p>	<p>The project areas are not considered critical habitat for those species for which evidence shows that the project areas can only be used occasionally, e.g. in search of food.</p> <p>The main possible effect arises from the barrier effect that arises due to the construction and use of the transport route.</p>	<p>Along the transport route, remote camera monitoring is underway to identify any areas that large mammals can use as favorite crossing points.</p> <p>Before starting the use of the transport route, culverts for mammals should be built and established and their maintenance and control should be ensured during the project.</p>
BIO.13	Appendix IV and IUCN EN bats (Lesser horseshoe bat)	The transfer station is translocated south of the previously planned location of Droškovac, to the location of the former Vareš Majdan Railway Station. Additional research has shown that the present facilities at the location of the Vareš Majdan Railway Station, which is planned for a transfer station, are not suitable for the shelter and residence of bats because they do not contain PRFs (potential characteristics of a shelter for bats).	Appendix IV and IUCN EN species are critical habitat triggers and therefore there must be no demonstrable impact on populations within the EAAA (i.e. local populations) in the long term.	Immediately before the start of the works, SQE will carry out a training inspection of abandoned buildings that could be used by bats for rest and shelter, and if they are spotted, they will take the necessary measures in order to avoid and mitigate the impact.

6. KEY ACTION ITEMS

6.1. BIO.01 - Insurance of net profit for amphibians referred to in Annex IV

Background

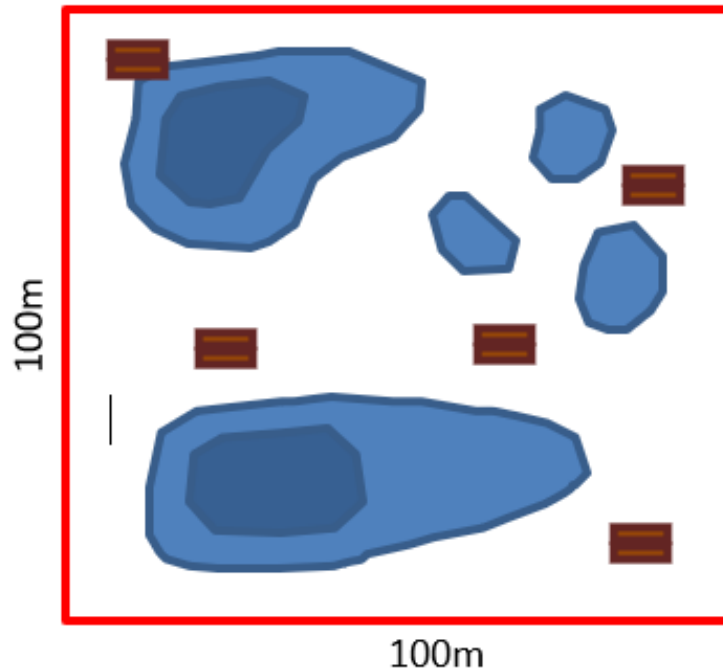
In order to ensure that the amphibians listed in Annex IV In order to ensure the protection of habitats for breeding and shelter, so that there are no net losses in Vrući potok, Trstionica, Bukovica and Mala Reka, it is necessary to ensure the taking and implementation of avoidance and mitigation measures, as well as measures for the restoration of these PBF watercourses and PBF amphibian habitats in the design, construction and operational phases. In order to maintain the natural potential of amphibians listed in Annex IV, it is necessary to take and implement measures to prevent and mitigate the impact of project activities on wetlands suitable for the reproduction of yellow-bellied frogs, Greek frogs, green frogs, agile frogs and other species under the supervision of an appropriately competent ecologist (SQE). Apart from the Greek frog, which relies more on running water but also reproduces in stagnant water, these generally early-succession amphibian species respond well to the creation of new areas of stagnant water, temporary and permanent ponds with the surrounding terrestrial habitat, which should be carried out based on the impact and possible consequences of the project activities in order to minimize net losses and ensure net profit under the supervision of SQE.

Given that in the development phase of the project, the route of the road was relocated from the Zagarski stream to the existing regional road Vareš Majdan - Tisovci, the project of construction of the transport road Rupice - Tisovci will not cause loss and damage to this stream at the previously planned length of 1 km and will not affect this habitat of PBF amphibians (there is no net loss of amphibians from Annex IV). Due to the relocation of the route of the road from the Zagarski stream to the existing local road, it is not necessary to ensure restorative management on a minimum of 3 km of the length of the second stream in order to minimize or prevent net losses of PBF amphibians, which achieves the preservation of the existing potential of amphibian biodiversity in the wetlands of the Zagarski stream, which is a special/significant contribution to the conservation of habitats due to the modification of the transport road project. The amphibian habitat restoration and restoration management measure referred to in Annex IV shall only be implemented in case the avoidance and mitigation measures fail to ensure that the project does not cause a net loss in order to ensure that there are no net losses based on the results of the field survey and the recommendations of the SQE.

Actions

1. Control and maintenance of amphibian ponds in wetlands in the project impact zone: ponds and ponds should be permanently or temporarily filled with water in order to support amphibians (see Display 3 Lakes are usually formed in an area where they will naturally fill with rainwater, surface water or flood water, so they do not require human intervention. Preferred areas are those with a naturally poorly drained substrate, on relatively flat ground along the watercourses Vrući potok, Trstionica, Bukovica, Mala rijeka and other small lakes and ponds.
2. Establishment of vegetation: In general, it will not be necessary to establish vegetation in lakes and ponds as natural succession of vegetation is allowed and species such as the yellow-bellied frog and green frog prefer non-vegetated, shallow breeding areas. An exception would be the translocation

of endangered plants that will be affected by the project, such as marsh marigolds, Dinaric peppercorns, forest angelica, Koh's rennet, yellow carousel and other plant species that are associated with wetlands and wetlands (see BIO.08 and BIO.10). In order to achieve the NNL of hydrophilic vegetation of tall greens (BIO.09), mowing and management could spread this vegetation around the new wetland area so that the project does not cause a net loss.



Display 3: Example of a potential wetland area (can be modified in topography).

Note: Light blue - shallow (temporary) water; Dark blue - deeper (permanent) water; Brown - logs/piles of stone. The area within the red line - natural regeneration, planting marsh marigolds, angelica and scattering hydrophilic vegetation of tall greens.

3. Protected habitats: Within the wetland, partially buried logs and/or piles of rock will be left to provide shelter and hibernation habitat for amphibians and reptiles, which will help to achieve a net gain in the habitat for reptiles listed in Annex IV (see BIO.07).
4. Translocation: SQE will be present immediately before and during the clearance of the terrain and the execution of works near the watercourses Vrući potok, Bukovica and Mala rijeka in order to check the protected habitats (under stones, logs, deep layer of leaves, etc.) and to relocate the amphibians present. The captured amphibians will be moved to a suitable location in the retained habitat and placed inside piles of logs and/or stone.
5. Monitoring: The local SQE will monitor natural and new ponds and ponds each year in the spring/summer months to ensure the establishment of target species for the first five years, with a detailed review after five years when the frequency of monitoring can be reduced. If additional intervention is needed, this can be addressed through a dynamic action plan process as recommended and supervised by SQE, including water, waste and environmental management measures. For example, after a number of years, one or more ponds and ponds/wetlands may

require re-excavation or removal of vegetation in order to create ecological conditions for the maintenance of amphibians. For the Greek frog, watch and implement BIO.03.

6.2. BIO.02 – Provision of minimum NNL PBF invertebrates (White-footed crayfish (WCC) and Stone crayfish)

Background

It is known that the Small River is inhabited by PBF of the species White-footed crab (*Austropotamobius pallipes* – EN) and Stone crayfish (*Austropotamobius torrentium* - FBiH-VU, as a precaution of PBF). It is possible that noble stream crabs are also present in the Bukovica River. In order to ensure the NNL of PBF, it will be necessary to prevent impacts on water quality and quantity within the Small River and the Bukovica River, which arise as a result of the project.⁵

Actions

1. Design and construction of small ponds (settling tanks): Appropriately designed sedimentary ponds will be downstream of the proposed tailings disposal site (TSF), to ensure that any runoff resulting from construction work and operational activities is captured and treated appropriately prior to reaching the Small River. The ponds will be designed according to the appropriate engineering specification according to the TSF design.
2. Design, construction and operation of a system for the treatment and recirculation of technological and rainwater wastewater for the purpose of their return to the process and prevention/minimization of discharge into the Small River, and thus the prevention of the impact on the hydrological and ecological conditions of this watercourse and the habitat of PBF invertebrates in order to minimize net losses.
3. Crayfish research: Investigation of crustaceans downstream of the abstraction of water from the Studenac spring, which forms the left tributary of the Bukovica River, monitoring of water levels and adaptive mitigation, where necessary, if indigenous species of noble brook crabs are present.
4. Water quality monitoring: (a) in the Mala River downstream of the outlet during the construction and operation of the TSF and (b) in the Bukovica River during the execution of works downstream of the bridging of the transport route over this river, in order to ensure that all contaminants and pollutants can be treated prior to the discharge of treated and treated water into the said watercourses in order to avoid and minimize the impact on the hydrological and environmental conditions of these watercourses and PBF invertebrate species.
5. WCC monitoring: For the first five years, SQE will conduct annual monitoring of white-footed crustaceans, including stone crabs and other PBF invertebrates, in the spring-summer season, with a review and review of the scope and dynamics of monitoring after this period, when there may be a reduction in SQE-based monitoring. The results of water quality monitoring, monitoring of crustaceans and PBF invertebrates, as well as all additional mitigation measures, are prescribed within this BAP, on the basis of which it is mandatory to undertake and implement all planned

⁵ The survey work is ongoing, and the results will be submitted in an updated BAP.

measures, as well as to perform field surveillance and, if necessary, take additional/corrective measures in order to mitigate and minimize net losses, i.e. to ensure that there are no net losses of PBF invertebrates.

6.3. BIO.03 – Provision of minimum NNL watercourses of PBF from plain to montane belt

Background

The watercourses Vrući potok, Mala rijeka, river Bukovica and Borovički potok meet the criteria of PBF as habitats from Annex 1. Habitats Directive. Given that these PBF watercourses are located in the area of potential impacts of project activities, appropriate measures for their protection are necessary through the application of a mitigation hierarchy in accordance with the ARRRT framework, with the ambition of no net losses.

By applying the mitigation hierarchy in accordance with the ARRRT framework with the ambition of no net losses, a change was made to the project of the transport route on the section that was planned on the part of the Zagarski potok watercourse in order to avoid a permanent loss in the length of 1 km. The transport road was relocated from the Zagarski stream to the existing local road Vareš Majdan - Tisovci, which avoided permanent loss in this habitat and impact on this habitat, so that the construction of the road will not cause a net loss of invertebrate biodiversity in the Zagarski stream. Therefore, due to the relocation of the road route from Zagarski potok to the existing local road, it is not necessary to ensure planned restorative management on a minimum of 3 km of the length of another suitable stream in order to minimize or prevent net losses, which achieves the preservation of the existing invertebrate potential in Zagarski potok. Zagarski potok can be used to implement measures to improve the biodiversity potential of invertebrates in order to achieve the objectives of the BAP in accordance with PR6.

Effects on amphibian species supported by these watercourses are addressed in BIO.01. In order to ensure the NNL habitats of PBFs, it is necessary to take and implement the planned measures by applying a mitigation hierarchy in line with the ARRRT framework with the ambition of no net losses. Throughout the project, management and monitoring activities are planned, as well as taking appropriate measures to achieve the goals without net losses.

As part of the detailed design, it is imperative to conduct an engineering study and include, as far as possible, the maintenance of the ecological integrity, the existing hydrological regime and the natural ecological conditions of the PBF watercourse in order to minimize net losses and achieve net profit during the project duration by applying and implementing appropriate measures in accordance with the BAP and PR6 criteria. Likewise, by successfully integrating the mitigation, protection and monitoring measures of the PBF watercourse into the project management system and their responsible implementation in accordance with the ARRRT framework, the objectives can be achieved without net losses, which is the fundamental objective of the BAP and the requirements of PR6.

Actions

1. Design and construction of small ponds (settling tanks) according to the appropriate engineering specification: to ensure that any runoff resulting from construction work and operational activities is captured and treated appropriately before reaching the PBF watercourse, in order to avoid or minimize the impact on the existing natural hydrological and ecological conditions of the PBF watercourse.
2. Design, construction, operation and maintenance of the system for the recirculation of technological and rainwater wastewater at the location of the Rupice mine and the location of the Tisovci ore processing plant for the purpose of their return to the process and prevention, i.e. minimization of discharge into watercourses, and thus prevention, i.e. minimization of the impact on the hydrological and environmental conditions of these watercourses, with the ambition of no net losses.
3. Taking measures to improve the ecological conditions of PBF watercourse habitats in order to sufficiently mitigate net losses with the ambition of no net losses as recommended and under the supervision of SQE.
4. Monitoring of water quality in: (a) Small River upstream and downstream of wastewater discharges, (b) Hot Stream, (c) Bukovica River upstream and downstream of the bridge construction and (d) Borovički Stream in the construction phase, to ensure that all contaminants and pollutants can be treated prior to the discharge of treated water into these watercourses in order to avoid and minimize the impact on the hydrological and ecological conditions of these watercourses and PBF invertebrate species. Water quality monitoring in the operational phase should include at least: (a) Mala rijeka and (b) Vrući potok, in accordance with the Water and Wastewater Management Plan.
5. Monitoring: For the first five years, SQE will conduct annual monitoring of PBF invertebrates and amphibians in the spring-summer season in the watercourses: Vrući potok and Mala rijeka, with a review and review of the scope and dynamics of monitoring after that period, when monitoring may be reduced if assessed as acceptable. Monitoring of water quality and monitoring of PBF invertebrates and amphibians, as well as all avoidance/mitigation measures, is prescribed within this BAP, on the basis of which planned measures should be taken and implemented, as well as field monitoring and additional interventions, i.e. corrective measures, with the ambition that there are no net losses.

6.4. BIO.04 – Provision of minimum>NNL PBF of acidophilic spruce forest

Background

Most of the direct and indirect impacts of the project are on this type of habitat. Historically, the habitats in the region would be part of a rich mixed forest system: the mixed forests of the Dinaric Mountains Ecoregion. In recent history, primary forests have been extensively used for trunks, then for iron smelting, which took place intensively in Vareš, and during and after local conflicts. Locally, forests have been cut down and transplanted with a commercially targeted species mix dominated by Norway spruce, but many other staple species are still present in small numbers. Therefore, the type of vegetation is analogous to the habitat in the UK "Plantation on Ancient Woodland Sites" (PAWS), where there is a largely continuous history of forest cover, but the structure and function are degraded

by poor management. As such, there is great potential for improving the quality of the forest through restoration management in accordance with a specially designed restoration management plan, the implementation of which achieves the objectives of no net losses.

The project will require a direct loss of 78.3 ha of this habitat, of which approximately 40 ha will be restored in the long term after the decommissioning of the Rupice mine. It is accepted that a restored forest will take many decades to reach the desired ecological state in order to meet the definition of PBF. There will be a net loss of forest area of 38.3 ha of relatively poor quality spruce forest associated with the construction of the Rupice - Tisovci transport road. As such, in order to realistically show the minimum of NNL, the area of 115 ha of existing degraded spruce forests will be restoratively managed in accordance with the Plan for the Restorative Management of Spruce Forest in order to compensate for the loss of biodiversity in the habitat of acidophilic spruce forests caused by the implementation of the project (Figure 4).

The management of the restoration will also help to achieve a minimum NRL for the partridge species (BIO.11) and large mammals (BIO.12).

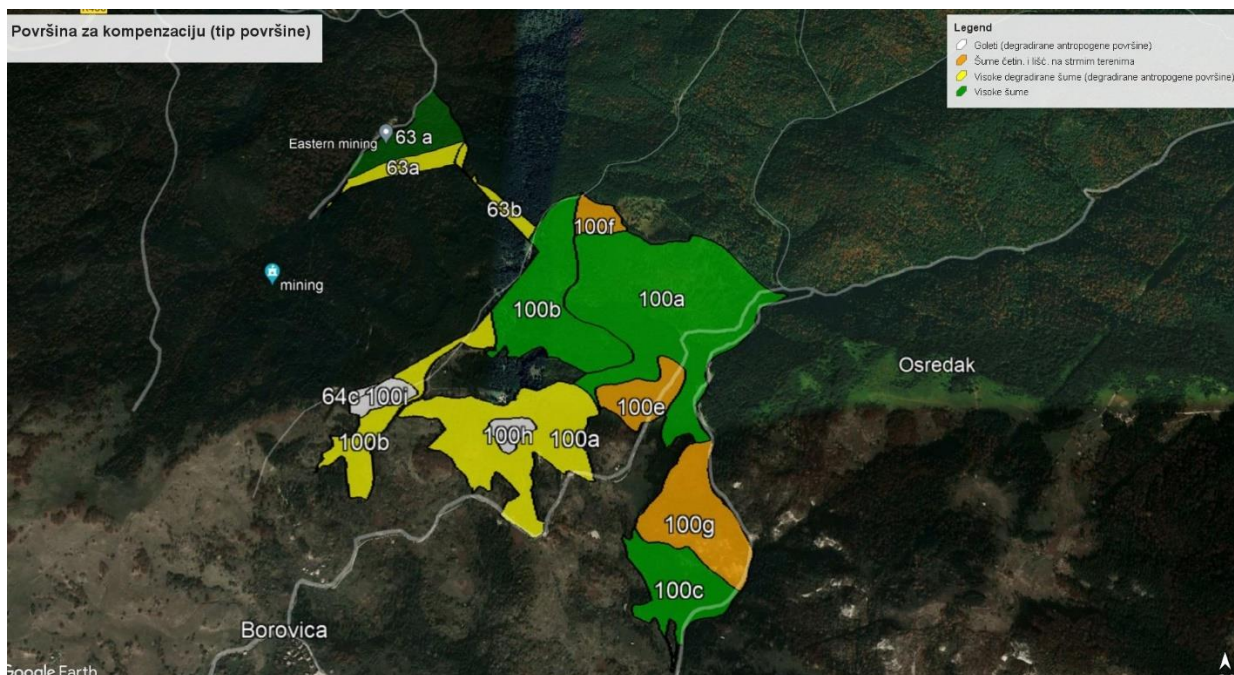


Figure 4: Area for restorative management of spruce forest in order to compensate for biodiversity losses caused by the project of opening the Rupice mine and the construction of the Rupice - Tisovci road

Actions

1. Identification of habitats for restorative management: in agreement with SQE and the local Forest Management Company, an area of degraded spruce forest was identified for restoration and restorative management of an area of 115 ha (Figure 4), which is included in the Forest Management Basis of Zenica-Doboj Canton in order to create conditions for compensation of losses caused by the opening of the Rupice mine and the construction of the Rupice - Tisovci road, with the ambition of no net loss and long-term with a net gain. Through restorative management, it is planned to convert degraded spruce forests into forests of high conservation value (HCVF), which support PBF. The area

is close to the site of the Rupice mine and is located to the north and east of this site, thus ensuring that the habitat within the EAAA has been restored, but that it is not affected by barrier effects and that the objectives of BIO.11 can be achieved within the EAAA project. The local Forest Management Company was encouraged to increase the area of the forest for restorative management from the planned 100 ha in the BAP (V1.0) to 115 ha in the revised BAP (V2.1), which is included in the Plan for the restorative management of the spruce forest in order to compensate for the losses in the habitat of acidophilic spruce forests caused by the implementation of the project of opening the Rupice mine.

An additional option may be to support the development and implementation of conservation and restorative management projects within the areas proposed for protection, such as Special Nature Reserve "Gornja Trstionica-Bukovica", park "Zvijezda - Tajan - Konjuh" in the north and secondly for the purpose of securing and achieving the objectives of the BAP (no net loss and long-term with a net gain).

2. Support a nursery of shrubs and flora managed by the local Forest Management Society so that it can be used for plant restoration in the area for the restorative management of the spruce forest in accordance with a specially developed plan in cooperation with the local Forest Management Company, the Cantonal Forestry Administration and other forest users.

3. Restorative Management (RM): RM may include, but not be limited to⁶:

- Establishment of a basic/core zone occupying at least 75% of the area of the area for restorative management. Establish a buffer zone around the core area that occupies about 25%.
- Core area:
 - There is no uncontrolled exploitation of trees;
 - Thinning, formation of standing and fallen dead trees - 5% of trees to be cut down and left as fallen or laid dead wood, 5% of hollow trees and leave standing dead trees (except glades/barrenness, see below);
 - Forced veteranization of 1% of trees – e.g. removal of the crown, creation of cavities;
 - Creation of small glades 20x20m to promote dense natural regeneration – 5% of the area;
 - Planting occasionally locally grown beech (*Fagus sylvatica*), black pine (*Pinus nigra ssp. nigra var. nigra*), ash (*Acer pseudoplatanus*), silver fir (*Abies alba*) in clearings, as well as subterranean species.
- Tampon/transition zone area:
 - Creating fallen dead trees – 5% of trees to be cut down and left as fallen dead wood (except glades/barrenness, see below);
 - Creation of small glades 20x20m to promote dense natural regeneration – 5% of the area;
 - Planting locally grown beech, maple, silver fir, underground species in glades;
 - Limited felling of trees (30% allowed for felling, the rest left).

The selection of trees to be managed will be carried out in consultation with SQE and the local Forest Management Society, in order to preserve the existing environmental interest of the forests (e.g. trees with existing woodpecker holes/squirrel nests/predator nests). An agreement has been signed

⁶<https://www.caledonianconservation.co.uk/cms/resources/Publications/cieemip73sep2011cathrineamphlett.pdf>

between Adriatic Metals BH d.o.o. Vareš and JP Forestry Company of Zenica-Doboj Canton on the implementation of this plan for the restorative management of spruce forests (Appendix 3).

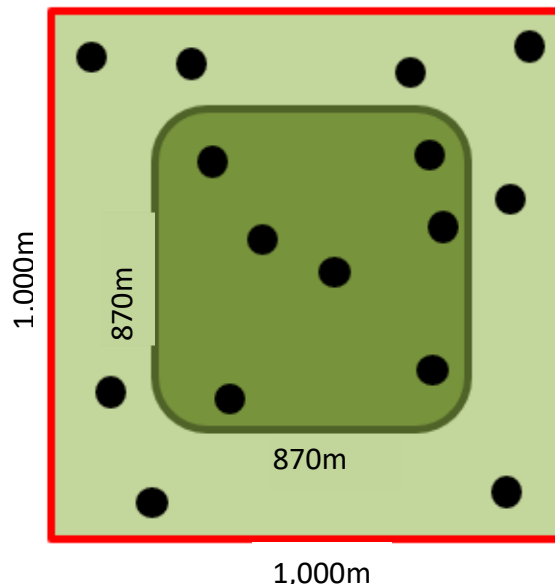


Figure 5: Example of 100ha RM of forest area. Can be adapted to shape depending on the choice in the field

Note: Dark green – core area; Light green – buffer zone; and Black Dots – glades.

4. Monitoring: SQE will conduct surveillance research for RM effectiveness, including habitat mapping, monitoring of changes in birds, flora, invertebrates, and mammals. Amendments to the plan may be made if additional environmental characteristics in need of protection or improvement are identified.
5. Forest restoration after the closure: the project area of the Rupice mine and VPP Tisovci, including the TSF, will be restored after the closure. The restoration will use a mixture of natural regeneration and transplantation of native species, including from nurseries, which will allow for a more dynamic emerging forest than the planting itself would achieve. Natural regeneration allows areas of dense and open forest, with a previous period of grassland and scrubland development, to establish habitats that are also valuable as "medium" and as migration corridors for more open habitat species.

With regard to species intended for planting, the afforestation plan would focus on diversifying the species mix according to the local ecotype of Dinaric mixed mountain forests for that altitude, and would also include basic shrub species. For example, before exploitation, the forest was probably a more open mixture of beech, Norway spruce, silver fir, maple, Bosnian maple (*Acer opalus subsp. obtusatum*), black hornbeam (*Ostrya carpinifolia*), with some native birch (*Betula spp.*) and alder (*Alnus spp.*). Trees will not be densely planted, in order to develop the flora of the forest soil that can be supplemented by the types of flora grown in the nursery.



Photograph 6.1: Examples of closed and open coniferous/mixed forest showing mature trees, standing and fallen dead trees, young regeneration and widespread soil flora.



Figure 6: Example of forest planting and natural regeneration.

Note: Light green – existing forest; Medium green – block tree planting; Orange – glades sown with locally green herbs; and white – areas left to natural regeneration.

6.5. BIO.05 – Ensuring that project activities do not spread invasive species

Background

The Japanese yard is located near the project work areas, including the existing transport route. Vehicles using the transport route risk spreading the Japanese yard on the wheels of a truck or excavator or by accidentally moving contaminated material. Japanese knotweed (JD) is a Schedule 9 invasive species in the UK and also listed as invasive in Europe. This species can spread vegetatively from any living part of the plant and, once established, can permanently damage sensitive ecosystems by shading other species, especially in wet areas, and can affect PBF.

Actions

1. Identify and treat JD: The SQE will identify all areas of the Japanese Yard within or adjacent to the project areas through an additional dedicated inspection. The SQE will advise on a suitable buffer zone where space allows, and the JD will be appropriately fenced off to demarcate the separation zone and prevent accidental spreading. An appropriate invasive species management plan will be developed and implemented. Where there is a risk that JD will spread due to project activities, it will

be treated with regular application of herbicides during the growing season, by an appropriately qualified person. Control of JD is usually done by applying a glyphosate-based herbicide three times a year during the growing season, from May to September throughout the years.

2. Monitoring: SQE will monitor work areas and transport routes for JD (and other invasive species). All new locations where JD (or other invasive species) are found will be appropriately marked and treated in accordance with the management plan.



Photograph 6.2: Japanese dvornik along the access road to the location of VPP Tisovci.

6.6. BIO.06 – Ecological tour

Background

Many species that can trigger PBF or critical habitat designation are mobile. Although a particular species may have been absent from the project's footprint area or nearby habitat during the initial surveys, there is a possibility that additional habitat characteristics may have been established before the work was carried out.

Actions

1. SQE will carry out a re-ecological re-visit of all project areas immediately prior to vegetation clearance, earthworks and other project activities, to ensure that there are no ecological features that require additional avoidance or mitigation in order to avoid and mitigate impacts on species that characterize PBF or critical habitat. All necessary actions will be discussed with Adriatic Metals BH doo and included in the BAP.

6.7. BIO.07 — Control and translocation of reptiles listed in Annex IV

Background

During basic research, reptiles from Annex IV were recorded, which are relatively common and widespread at the national and local level. In general, the project areas, which are mostly dense spruce forests, are considered suboptimal for reptiles and local populations will not be significantly affected as a result. Parts of the transport route pass through meadows, grasslands and forest edges, which can

provide a habitat for rest, enjoyment and shelter for occasional or transient reptiles. The measures taken for BIO.01, BIO.08 and BIO.09 will also help to adequately address the impact on reptiles.

Actions

1. Avoid nuisance: Clearing vegetation and disturbing the soil will be avoided during the dormant period of reptiles (October to April) wherever possible at the edge of the forest or in lawns. The grasslands within the project will be mowed to a height of about 150 mm and left for a few days so that the reptiles can disperse into the retained habitat before starting work.
2. Tour and translocation: SQE(s) will be present before and during the clearing of vegetation and the execution of works along the transport route that passes through the grassland and forest edge, in order to check habitat refuges, e.g. piles of logs and rocks, and caught by reptiles. Reptiles will be encouraged to be relocated or manually relocated to retained habitat, or they will be captured and relocated to a new wetland area and housed within log/stone piles if necessary.
3. Monitoring: It should not be necessary to monitor reptiles within the project areas as no significant impact is expected as a result of the project activities, but all species identified during the monitoring of amphibians in the new wetland area will be recorded.

6.8. BIO.08 – Provision of minimum NNL PBF of mountain meadows

Background

This habitat is located on the planned route of the road in the area of the village of Semizova Ponikva and about 2.5 ha will be permanently lost by the construction of the road, with the potential that the surrounding retained habitat will be negatively affected through dust and exhaust gas emissions. In order to adequately mitigate these impacts, it is necessary to compensate for the loss in the habitat of mountain meadows through the restoration and ongoing restorative management of the shift area. These measures will also help solve the problem and achieve the objectives of BIO.09 - Ensuring minimum NNL PBF hydrophilic vegetation of tall greenery and BIO.10 - Ensuring minimum NNL of Balkan endemic and nationally endangered plants.

Actions

1. Identify a suitable area for the restorative management of mountain meadows: according to the recommendations of the SQE, a suitable area for the restorative management of mountain meadows along the transport route in the area of the village of Semizova Ponikva, which are in danger of being lost due to natural succession of vegetation and poor agricultural practices, has been identified. Contracts were signed with the local population for the use of meadows with a total area of 6 ha for the purpose of implementing measures for restoration and ongoing management to compensate for losses in the habitat of mountain meadows due to the construction of a freight road. These meadows will be restoratively managed in accordance with the developed restoration management action plan to compensate for the losses of mountain meadows, in order for the project to show a minimum net loss (NNL) and long-term net profit within the EAAA project.

2. Grassland management: After identifying and ensuring the use of an appropriate area of mountain meadows with local population, SQE has developed a management plan for the displaced area for the duration of the project, which includes, but is not limited to:
 - Hiring local livestock farmers for conservation services;
 - Installation of a fence and shelter for grazing animals;
 - Control of the regeneration of shrubs and trees and removal of the resulting growths;
 - Cessation of fertilization, burning, and use of herbicides (except for any invasive species);
 - Localized removal of the topsoil, if necessary;
 - Mowing the lawn and removing growths (ideally one mowing per year at the end of summer);
 - Low intensity grazing (ideally livestock, which is generally better for botanical protection); and
 - Relocation of e.g. the Balkan endemic Dinaric widow, *Crepis conyzifolia* and stemless gentian, if they are not locally present in the new area of the managed grassland.
3. Monitoring: SQE will monitor the condition of the lawn at least once a year, during the summer, for the duration of the project and determine if any additional interventions are needed, which should be added to the action plan.

6.9. BIO.09 – Provision of minimum NNL PBF hydrophilic vegetation of tall greens

Background

This habitat extends within the area of mountain meadows near the route of the transport route and the habitat can be negatively affected by possible changes in local hydrology and runoff of polluted rainwater from the roadway, as well as emissions of exhaust gases and dust, which can change the structure and composition of this habitat if adequate avoidance and mitigation measures are not taken and implemented. In order to adequately avoid and mitigate these effects, the route of the road was moved southwest and west to a greater distance from the habitat of hydrophilic vegetation of tall greenery in order to avoid permanent loss in this habitat and mitigate/minimize the negative impacts of the construction and use of the road on this habitat so that there would be no net loss. By moving the route away from the habitat of hydrophilic vegetation of tall greenery, permanent loss in this habitat is avoided and the need to implement compensation measures is excluded, and the potential indirect negative impacts of road emissions on this habitat and the species present will be minimized and avoided by taking planned measures to solve this problem (controlled drainage and treatment of rainwater, mitigation of local hydrological disturbances, mitigation of dust and exhaust gas emissions, etc.) for the purpose of protecting mountain meadow habitats (BIO.08) and indirect protection of habitats of hydrophilic vegetation of tall greenery. These measures will also help achieve the objectives of BIO.10 - Ensuring minimum NNL of Balkan endemic and nationally endangered plant species.

Given that the habitat of hydrophilic vegetation of tall greenery is very sensitive to changes in ecological conditions related to the change in high moisture of hydromorphic soil (change in water level), and the runoff of polluted rainwater from the road and the deposition of dust and nitrogen through the passage of trucks, and that it supports species that classify a critical habitat, it is necessary to ensure the management of protection measures for this habitat and annual monitoring of the

condition and changes in its structure during the project in accordance with the A management and control plan to avoid net loss and maintain the existing natural potential of biodiversity, with the ambition to secure net profits. The construction and use of the transport route must not show a net loss of species populations in the habitat of hydrophilic marginal communities of high greenery in the long term, and therefore it is very important to ensure the planning and implementation of conservation measures for this habitat in order to ensure that there is no net loss.

Actions

1. Vegetation management: Adriatic Metals BH d.o.o. will ensure the taking and implementation of measures for the management of hydrophilic vegetation of tall greenery in accordance with the management plan specific to the location conditions of this habitat for the duration of the project, which may include, but is not limited to:
 - Engagement of a conservation organization or conservation experts;
 - Control of the regeneration of shrubs and trees and removal of the resulting vegetation at the end of summer in the restoration area;
 - Cessation of fertilization, burning, and use of herbicides (except for any invasive species);
 - Localized removal of the topsoil, if necessary;
 - Low intensity grazing (ideal for livestock, which is generally better for botanical conservation);
 - Ensuring and maintaining a constant flow of the local stream through a culvert under the transport road in the area of the village of Semizova Ponikva;
 - Other appropriate measures as recommended and supervised by SQE.
2. Monitoring: SQE will monitor the state of hydrophilic vegetation of tall greenery every year in the summer season, during the duration of the project, and determine whether additional interventions and appropriate measures are needed, which should be added to the action plan in order to avoid negative impacts of the project on this habitat and the PBF plant species present and to ensure that the project does not cause a net loss in this habitat.

Areas for management of the implementation of measures BIO.08 - Provision of minimum NNL PBF of mountain meadows and BIO 09 - Provision of minimum NNL PBF hydrophilic vegetation of tall greenery are given in Figure 7.

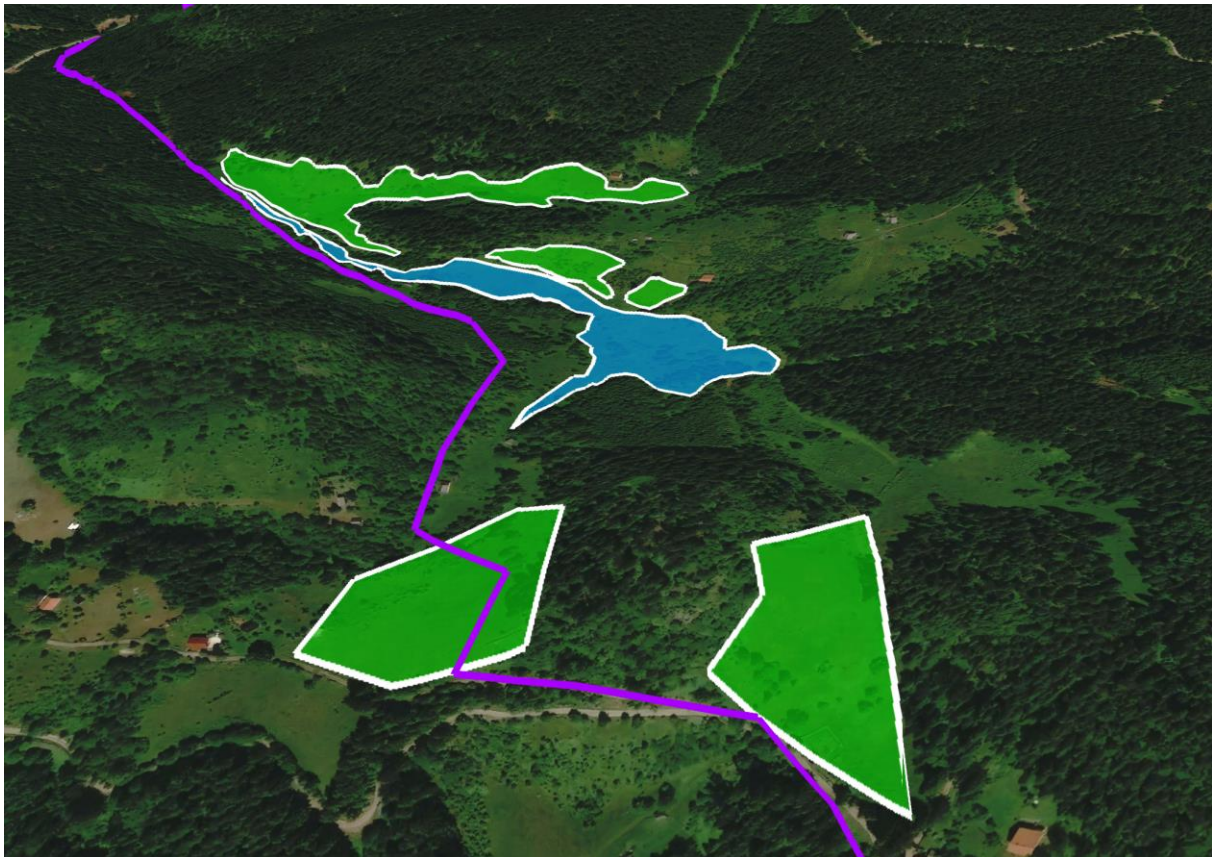


Figure 7. Management areas of mountain meadow habitat and habitat of hydrophilic vegetation of tall greenery

6.10. BIO.10 - Provision of minimum nml of Balkan endemic and nationally endangered plants

Background

During the basic research, 14 nationally endangered plant species and 2 Balkan endemic plant species were identified. Although the project is not expected to have a significant impact on local populations of these species, avoidance, mitigation, minimization and management measures will seek to achieve a net gain for populations in the EAAA. These are: marsh marigold, Pančić's jelly, red hemlock, long-leaved warbler, white-headed warbler, angelica, Koh's gentian, blue grouse, yellow carousel, yellow sedge, white udder, hairy goldfinch, marsh pear pear, Transylvanian spotted orchid, Dinaric shrimp and prickly bristle.

The habitats of these plant species are preserved and improved by managing retained habitats and/or creating new habitats within the EAAA. As such, even without translocation, local populations of these species are expected to be maintained, including by taking management measures for retained habitats and restorative management areas.

Actions

1. Tour and translocation: SQE will conduct a tour before clearing vegetation and construction work and move all individuals of these species from the endangered zone by excavation and

transplantation to suitable locations in retained habitats suitable for each species. In the areas of displacement designated to compensate for losses in the habitats of acidophilic spruce forest and mountain meadows, new populations of nationally endangered, vulnerable and endemic plant species will be established, and the restorative management of these areas, i.e. these habitats, in accordance with a specially developed action plan, will create conditions for increasing the number of populations of plant species present that classify critical habitat or biodiversity priority values.

2. Monitoring: SQE will monitor the restored and managed habitat and the translocated or new habitat every year in the spring-summer season, in order to ensure the successful establishment and increase the number of populations of endemic and nationally endangered plant species, and if necessary, additional seedlings or seeds will be collected in order to strengthen the populations and maintain local populations of these species and ensure minimum PPI in the long term, for the duration of the project, ensuring net profit.

6.11. BIO.11 – Provision of minimum>NNL PBF Hazelnut, partridge

Background

Hazelnut is an Appendix I species that has been recorded in forest peripheries and in spruce forests. This species prefers mixed forests with a rich substrate and a varied age structure. It does not prefer dense stands of acidophilic spruce forest, without glades and ground flora, such as is represented in the wider area of Rupice and along the route of the freight road from Rupice to Semizová Ponikva. During May, it forms nests on the ground where it rests for up to 25 days, which is why it is imperative to carry out detailed surveillance research from March to August before removing the vegetation in order to determine the presence of the hazel grouse, i.e. its nests in order to avoid negative impacts and preserve local populations. Lještarka can benefit from the short-term forest restoration works undertaken under BIO.04, as well as from the long-term restoration of the project's footprint area after the closure.

In addition to the hazel grouse/partridge, there are two nationally endangered bird species from the category of vulnerable species (the swallow falcon and the mountain lark, FBiH-VU) that require the necessary measures to be taken in order to maintain the natural potential of their local populations without net losses, and five birds from the category of low-risk species (owl, nightingale, great magpie, shrike and hippox, FBiH-NT) that should be protected as much as possible in order to protect minimizing the negative impact and preserving local populations.

Actions

1. Visiting and avoiding nests: Clearing vegetation during the breeding season of birds will be avoided where possible (March to August). If unavoidable, the SQE will make a survey of the area immediately prior to the project activities before clearing vegetation and carrying out project activities, if they are carried out within the nesting period, and if any active nests are found, the area with nests present should be avoided with an appropriate buffer zone and protected until the nesting attempt is completed, as recommended and supervised by SQE. These species are expected to benefit from the forest restoration work from BIO.04 and monitoring is unlikely to be necessary.

6.12. BIO.12 – Adequate mitigation of impacts on mammals listed in Annex IV

Background

Basic research has determined that none of the project areas provides more than a transitional habitat for Annex IV terrestrial mammals (which are qualified species for ACH). These species are the brown bear, the gray wolf, the Eurasian lynx, and the European wildcat. Although very little information is available on the distribution of large mammals in BiH, areas known to be crucial for these species are located a few kilometers north of the project area that is connected to the proposed "Zvijezda-Tajan-Konjuh" National Park, and potentially two caves: Šajnović Stone and Greek Stone south of Rupice. A transport route divides habitat to the north of these caves and, as such, is the main identified impact on large mammals.

The proposed Forest Restoration Area (RM) that is associated with BIO.04 will improve the foraging habitat and dens for these mammal species in the short and long term by increasing the cover and available foraging resources within the area of the forest that is largely degraded.

Actions

1. On the section of the transport road between Rupice and Semizova Ponikva, a large number of crossings and culverts for large mammals will be installed in order to ensure the connection between the habitat and the forested area in the north. It is envisaged that a minimum of 4 crossings along the transport route will be needed to ensure sufficient connectivity between the separated parts of the habitat, designed in accordance with the published instructions⁷. Crossings can be box culverts or ecological bridges, depending on the topography and engineering characteristics of the site. All crossings will be protected and designed in such a way that they fit into the surrounding landscape and vegetation. The culverts will be at least 2.5 m high and 3 m wide, while the ecological bridges will be at least 7 m wide, all crossings will have a part of the fence of 100 m, or natural fences, on both sides to guide wild animals to them. The exact location, number and specification of the culvert will be determined by Saraj-inženjering d.o.o. Sarajevo during the main design phase, and will be led by a local biodiversity specialist to ensure efficient placement of crossing locations for unhindered migratory movements between parts of the separated habitat due to the construction and use of the transport route.
2. Signage: Installation of appropriate signage in the necessary places along the transport route, especially on the section from the site of Rupice to the site of Semizova Ponikva, which passes through the coniferous forest.
3. Informing staff: SQE will be involved in informing truck drivers and other personnel on the project about the potential presence of large mammals, their importance for conservation and the measures expected of them during the project. These measures may include, but are not limited to:
 - Enforcement of appropriate speed limits on freight transport roads;
 - Implementation of appropriate waste disposal in designated places;

- Continuing Professional Development (CPD): Informing about the ecological importance of the local area and the Annex IV mammals found in this area; and
 - Informing staff about the importance of legal hunting.
4. Monitoring: Monitoring of the presence and migratory routes of large mammals and their traces should be carried out before and during the execution of the project works and in the operational phase of the project, of which records should be kept, including recording the date and location where the mammals were observed and traces of their movement or stay in order to take mitigation measures and ensure minimal net losses. Adriatic Metals BH d.o.o. will keep a record of large mammals or tracks spotted by drivers on the transport route or other personnel on the project, including the date, location and other important information. This information will be passed on to SQE to map any areas where a further reduced vehicle speed limit would be desirable, possibly limiting or not to specific months of the year.
5. Remote camera surveillance: SQE will install at least 6 remote cameras along the transport route between Rupice and Semizova Ponikve to monitor the use of the crossing by large mammals and to inform about any ongoing mitigations if a regular mammalian road crossing is found. If available, remote cameras should also be installed near the Šajinovicki kamen and Grčki kamen caves to determine their use by large mammals and to determine whether they should be treated as critical habitat characteristics.



Figure 8: Examples of traffic signals

6.13. BIO.13 – Avoidance of effects on IUCN EN bat species listed in Annex IV

Background

The basic surveillance survey did not identify suitable places of hibernation, residence and shelter of bats within the project areas where the removal of vegetation and construction works are planned. Abandoned buildings along the route of the transport route in the area of Semizova Ponikva and Vareš Majdan and in the area of the former Vareš Majdan railway station do not contain PRFs (potential shelter features) and are not suitable for maternity or hibernation of bats. On the basis of field research and collected data, it was estimated that the project areas are not crucial for the support of bats and

therefore these species do not represent an obstacle to project activities. All known and identified places of hibernation and stay of bats are located outside the project areas and endangered zones (caves: Ponikva, Greek Stone and cave at the location of Kapija south of Vareš Majdan).

Initial research shows that the facilities in the Tisovci project area, along the route of the road in the area of Semizovo Ponikva, as well as in the area of the route and the Vareš Majdan transfer station, are not suitable for the shelter and residence of bats in accordance with the criteria from the Guidelines for the assessment of the potential suitability of development sites for bats (Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edn., 2016).

The transfer station is located south of the previously planned location of Droškovac to the location of the former Vareš Majdan Railway Station. Additional research has shown that the present facilities at the location of the Vareš Majdan Railway Station, which is planned for a transshipment railway station, are not suitable for the shelter and residence of bats, and detailed observation did not detect bats and traces of the presence of bats in buildings, under bridges and in other places. Therefore, this location of the transfer station is more appropriate because a potential impact on the bat shelter in the abandoned administrative building and the abandoned tunnel of the former Droškovac mine was avoided.

Actions

1. Monitoring: SQE will monitor the presence of bats and traces of their presence in abandoned buildings containing PRFs (potential shelter features) along the route of the Semizova Ponikva - Vareš Majdan freight road and at the location of the Vareš Majdan transshipment railway station, in order to take avoidance and mitigation measures if traces of their presence are noticed. Any additional mitigation should be added to the Biodiversity Action Plan.

