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ADRIATIC METALS PLC

VARES POLYMETALLIC MINING PROJECT

BIODIVERSITY ACTION PLAN

October 2021

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VARES POLYMETALLIC MINING PROJECT

BIODIVERSITY ACTION PLAN

October 2021

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1 INTRODUCTION

This Biodiversity Action Plan (BAP) follows the recommendations made within the Impact Assessment (Chapter 5.4); part of the Environmental and Social Impact Assessment (ESIA) for Adriatic Metal's Vares project, in Bosnia (hereafter referred to as "the Project"). The BAP is a critical component of the Project's Environmental and Social Management System (ESMS) and will be managed by the Environmental and Social Manager for the Project.

This BAP details a framework for the specific actions required to adequately address impacts to priority biodiversity resulting from Project activities. This document is required to demonstrate compliance with the European Bank for Reconstruction and Development's (EBRD) Performance Requirement (PR) 6 on Biodiversity (including national and international laws), with regards Priority Biodiversity Features (PBF) and Areas of Critical Habitat (ACH) or qualifying species for either of these designations.

The BAP expands upon the Specific Biodiversity Mitigation Actions outlined in Chapter 5.4 of the Impact Assessment which are to be undertaken prior to, during and after the implementation of the Project, along with responsibilities, general timeframes and monitoring requirements. The General Mitigation Measures outlined in Table 5.4.10 of the Impact Assessment are not discussed in further detail here.

This BAP is a "live" document and is expected to evolve and to be enhanced as necessary throughout the Project detailed design, early works, construction, operation and decommissioning phases. For monitoring there is an expectation that this will be undertaken regularly (annually unless stated otherwise) for the first five years with a review after five years. At this point monitoring may be reduced or increased as necessary.

Adriatic Metals retains ultimate responsibility for ensuring that the measures outlined in this BAP are implemented.

In order to achieve several of the actions in this plan, consultation will need to be undertaken with the local forestry commission, fishing society, local/national government conservation or Ministry of Agriculture, Water Management and Forestry, Konjuh Protected Landscape authority, any local conservation NGOs/ groups and Ministry of Environment and Tourism.

2 REGULATORY FRAMEWORK

There is an expectation that EBRD-financed projects are designed and operated in compliance with good international practices relating to sustainable development. The PR relevant to biodiversity is EBRD PR6, the objectives of which are as follows:

- Protect and conserve biodiversity using a precautionary approach;

- Apply the mitigation hierarchy, with the aim of achieving no net loss of biodiversity, and where appropriate, a net gain of biodiversity; and
- Promote good international practice (GIIP) in the sustainable management and use of living natural resources.

This BAP provides a method for achieving compliance with the objectives of EBRD PR6.

3 PROJECT DESCRIPTION

3.1.1 Project Location and Setting

The Vares Project is located around the town of Vareš, in the Vareš Municipality, Zenica-Doboj Canton, Bosnia and Herzegovina. The Rupice mine site in close proximity to the border of neighbouring Kakanj Municipality. The Project consists of the polymetallic Rupice deposit, and the Vares Processing Plant facility, as well as a 27.4km haul route connecting the two. The sites are located 8.7km west-north-west and 3.5km east respectively, from the town of Vareš. The Project is approximately a 50-minute drive from the capital city of BiH, Sarajevo.

Access to the concession consists of a series of sealed roads, passing through the mining town of Breza from the closest airport at Sarajevo 50km to the south of the Project. A rail line runs through valleys in the surrounding area and the Vares Processing Plant can be accessed by a sealed road that links with a rail siding in the town of Vareš.

The Rupice mine and associated surface infrastructure footprint is situated within a steep wooded valley, on land owned and managed by the Vareš Forestry Commission. The haul route passes through a combination of forestry land, making use of existing forestry tracks where possible, as well as some sections of grassland/meadow. The Vares Processing Plant is located on a small plateau (almost certainly an engineered platform) high on the edge of a valley and is brownfield land used for processing of metals during the previous period of mining (1990s).

3.1.2 Project Overview

The Project broadly consists of underground polymetallic mining at Rupice, the haulage of ore via a purpose-built haul route 24.5km to the Vares Processing Plant, processing of ore and the movement of tailings back to Rupice for paste backfill. Waste rock will be stockpiled at Rupice, before being used as part of backfill. Tailings not used in backfill will be stored in a dry stack facility, designed to meet the capacity requirements across the life of mine, located in a valley south of the processing plant. The final lead-silver and zinc concentrates will be transported to a rail loadout facility in Vares and then onwards for further refinement and sale. The Project layout is shown in Figure 1.

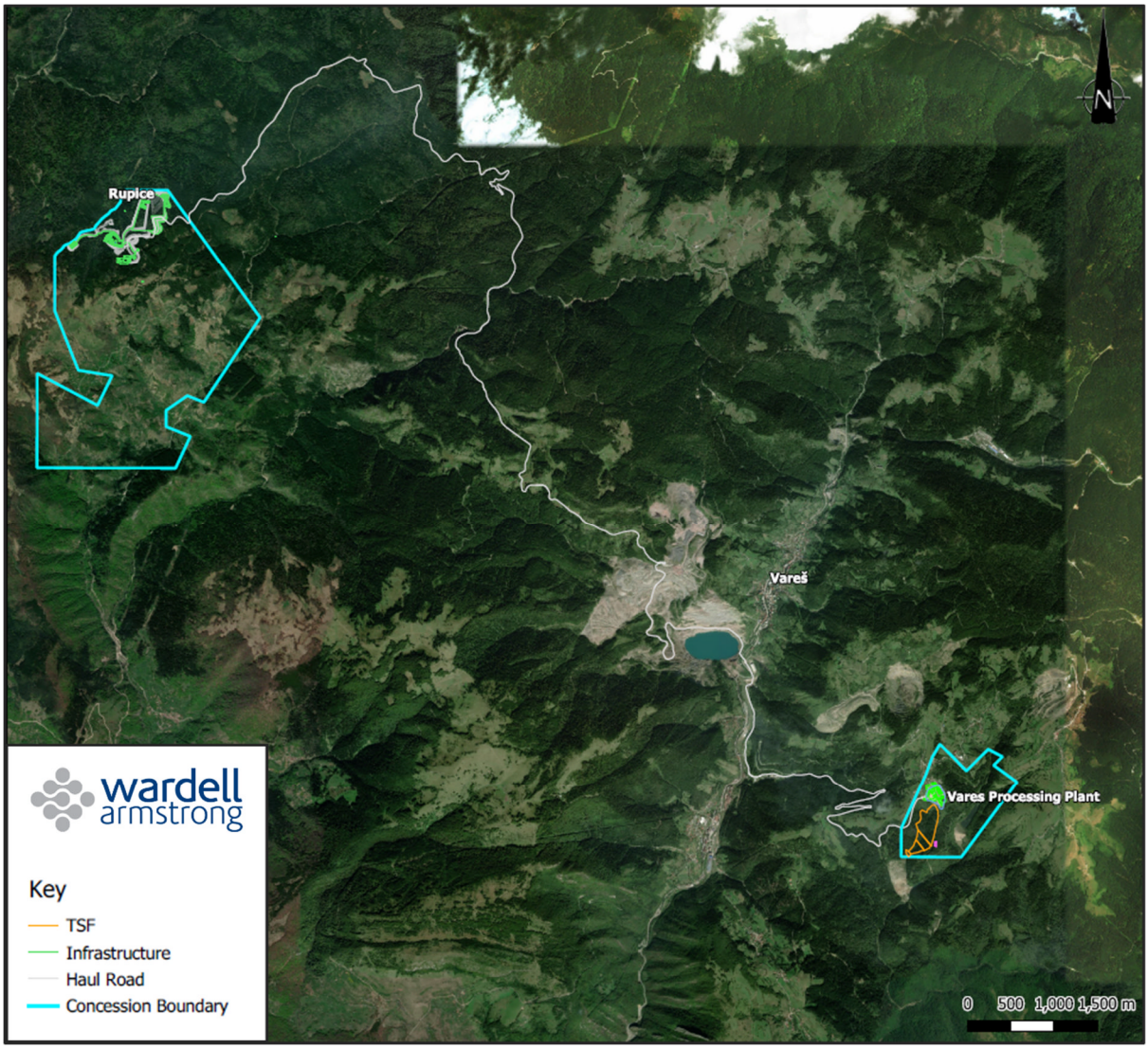


Figure 1: Vares Project Layout

4 BASELINE AND IMPACT ASSESSMENT

The baseline and impact assessments considered an Ecologically Appropriate Area of Analysis (EAAA)[1] for each species or species group in particular for 'priority biodiversity features' and 'areas of critical habitat'. 'Priority biodiversity features' (PBF)[2] and 'areas of critical habitat' (ACH) are defined as follows and taken directly from Table 1 of the 2020 guidance note for PR6[3]:

Criterion	Priority Biodiversity Feature	Critical Habitat
1. Priority ecosystems		
Threatened ecosystems	(PR6 para. 12-i)	(PR6 para. 14-i)

[1] The landscape level distribution of the feature requiring study, considering the ecological patters, processes and functions that are necessary to support that feature.
[2] Priority biodiversity features are a subset of biodiversity that is particularly irreplaceable or vulnerable, but at a lower priority level than critical habitats.
[3] Guidance Note 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources (v. January 1, 2020). Sept 10, 2020

(a) Habitats listed in Annex 1 of EU Habitats Directive (EU members only) or Resolution 4 of Bern Convention (signatory nations only) (b) IUCN Red-List EN or CR ecosystems	(a) EAAA is habitat type listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention (b) EAAA** < 5% of the global extent of an *ecosystem* type with IUCN status of CR or EN	(a) EAAA is habitat type listed in Annex 1 of EU Habitats Directive marked as "priority habitat type" (b) EAAA ≥5% of global extent of an ecosystem type with IUCN status of CR or EN (c) EAAA is ecosystem determined to be of high priority for conservation by national systematic conservation planning
2. Priority Species and their Habitats		
Threatened species (a) Species and their habitats listed in EU Habitats Directive and Birds Directive (EU members only) or Bern Convention (signatory nations only) (b) IUCN Red List EN or CR species (c) IUCN Red List VU species (d) Nationally or regionally (e.g., Europe) listed EN or CR species	(PR6 para. 12-ii) (a) EAAA for species and their habitats listed in Annex II of Habitats Directive, Annex I of Birds Directive, or Resolution 6 of Bern Convention (b) EAAA supports < 0.5% of global population OR < 5 reproductive units of a CR or EN species. (c) EAAA supports VU species (d) EAAA for regularly occurring nationally or regionally listed EN or CR species	(PR6 para. 14-ii) (a) EAAA for species and their habitats listed in Annex IV of the Habitats Directive (See EU restrictions) (b) EAAA supports ≥ 0.5% of the global population AND ≥ 5 reproductive units of a CR or EN species (c) EAAA supports globally significant population of VU species necessary to prevent a change of IUCN Red List status to EN or CR, and satisfies threshold (b) (d) EAAA for important concentrations of a nationally or regionally listed EN or CR species
Range-restricted species	(PR6 para. 12-ii) (a) EAAA for regularly occurring range-restricted species	(PR6 para. 14-iii) (a) EAAA regularly holds ≥ 10% of global population AND ≥ 10 reproductive units of the species***
Migratory and congregatory species	(PR6 para. 12-ii) (a) EAAA identified per Birds Directive or recognized national or international process as important for migratory birds (esp. wetlands)	(PR6 para. 14-iv) (a) EAAA sustains, on a cyclical or otherwise regular basis, ≥ 1 percent of the global population at any point of the species' lifecycle (b) EAAA predictably supports ≥10 percent of global population during periods of environmental stress

*Quantitative thresholds derived from IUCN Key Biodiversity Area Standard and aligned with International Finance Corporation's (IFC) Guidance Note 6 (rev. 2019)

**EAAA = *ecologically appropriate area of analysis*, as defined above

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

Desk study and extensive site surveys were undertaken to inform this Biodiversity Action Plan (BAP). Desk and field studies have been undertaken by the University of Zenica, Institute "Kemal Kapetanović" in Zenica (Zenica Institute) and overseen by Wardell Armstrong International (WAI).

The desk study involved searches for:

- Legally protected areas for nature conservation within a theoretical zone of influence (ZoI) of the Project, and areas which are internationally recognised as having high biodiversity, including potential Natura 2000 sites, Biosphere Reserves, Key Biodiversity Areas, Global 200 Ecoregions, Endemic Bird Areas (EBAs), Important Bird Areas (IBAs) and areas listed within the national 'Strategy and Road Map for Protection of Biological and Landscape Diversity (2015-2020)';
- Species which are protected in BIH or on the 'red list' in BIH (based upon Habitats Directive (EU HABITATS DIRECTIVE (92/43/EEC) and Birds Directive (Council Directive 79/409/EEC);
- Species or sub-species which are considered by specialists to be threatened, declining or endemic either in BIH or in the region (Balkans);
- Areas of critical habitat according to the definition in EBRD's PR6;
- Species which might suggest or trigger the presence of critical habitat according to PR6. This includes species which are listed by International Union for Conservation of Nature (IUCN) as being endangered or critically endangered at a global and European level as well as species meeting other criteria listed in the Performance Standards; and
- Habitats or ecosystems which might be associated with key evolutionary processes or are associated with ecological functions that are vital to maintaining the variability of biodiversity features (described as critical habitat features), defined in PR6.

The subsequent field surveys were informed by the desk study and the preliminary habitat assessment. Field surveys for various habitats and species identified as potentially being impacted by the project were undertaken between 2019 and 2021.

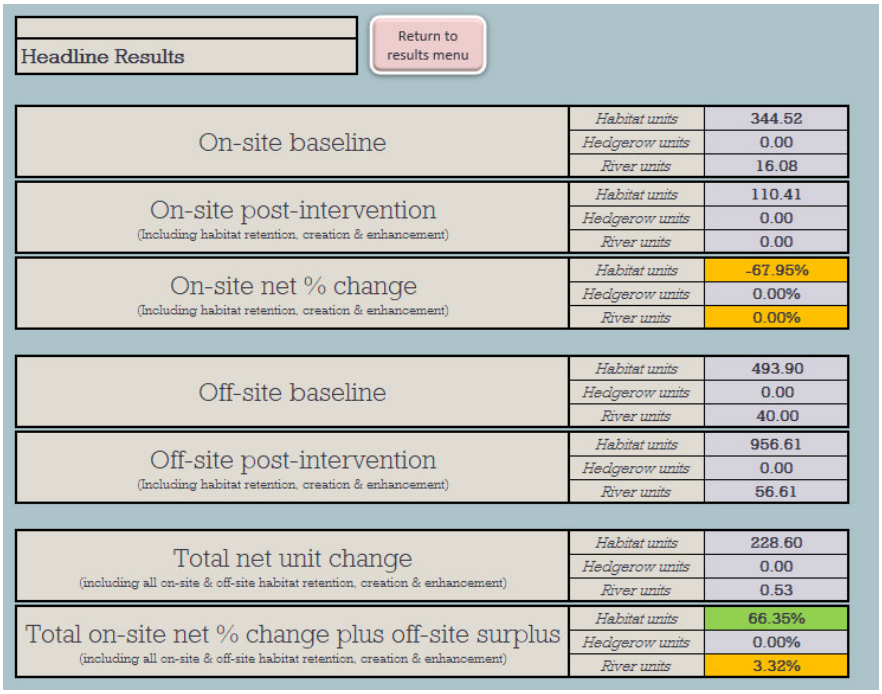
The ecological baseline results and assessment of impacts are discussed in detail in the ESIA chapters 405 and 504 respectively. The Impact Assessment identified several features requiring specific avoidance, mitigation or offset measures which are the subject of this BAP.

5 SUMMARY OF KEY ACTIONS

This BAP enables the project to meet the requirements of PR6 within an acceptable time frame, as stipulated in PR6, paragraph 6 as discussed above.

In July 2021, Natural England (NE), the government's advisor for nature in England, launched a new tool to help measure biodiversity net gain on development sites. PR6 does not require the use of a specific calculation tool, and as such in order to inform the net gain/loss calculations, The Biodiversity

Metric 3.0 - Calculation Tool[4] was used as the most up-to-date tool in use in England. This tool is used to assess the baseline biodiversity value and the predicted value of habitats post-development (see Appendix 1). Existing habitat areas and their condition are taken from the baseline survey information and areas were measured using GIS. In terms of fitting the local habitats into a table that is designed for British ecosystems, a 'best fit' was used in terms of the type and condition of forest areas. A summary is provided below in Figure 2.



Headline Results

Return to results menu

On-site baseline	*Habitat units*	344.52
	Hedgerow units	0.00
	River units	16.08
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	110.41
	Hedgerow units	0.00
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	-67.95%
	Hedgerow units	0.00%
	River units	0.00%
Off-site baseline	*Habitat units*	493.90
	Hedgerow units	0.00
	River units	40.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	956.61
	Hedgerow units	0.00
	River units	56.61
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	228.60
	Hedgerow units	0.00
	River units	0.53
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	66.35%
	Hedgerow units	0.00%
	River units	3.32%

Figure 2: Summary of Biodiversity Metric

Table 5.1 below summarises the PBF/ACH features requiring specific actions, which are described in further detail thereafter.

[4] The Biodiversity Metric 3.0 updates and replaces the beta Biodiversity Metric 2.0 (JP029) published in 2019. Biodiversity Metric 3.0 is a biodiversity accounting tool that can be used for the purposes of calculating biodiversity net gain.

Table 5.1: Biodiversity Action Plan - Key Actions				
I.D	**Ecological Receptor**	**Summary of Action**	**Rationale for Action**	**Timing**
BIO.01	Amphibians breeding along the Zagarski stream (Annex IV species) Yellow-bellied toad Green toad Greek frog Agile frog	Identify an area (approximately 1ha) where new wetland habitat can be created. New wetland to include new breeding ponds and terrestrial habitat, ideally fairly near the Zagarski stream or another nearby watercourse, on fairly flat ground and near existing forest/scrub or other habitat. Location to be agreed in consultation with Zenica Institute. Monitoring of new wetland and amphibian populations including breeding activity.	Annex IV species are triggers of critical habitat and therefore there can be no demonstrable impact to the population within the EAAA (i.e. local population) in the long term.	The ponds should be created prior to works along the Zagarski stream so that there is new breeding habitat available, and amphibians can be moved by suitably qualified ecologists (SQEs) during ground clearance. Amphibians should not be moved during their dormant period coinciding with frosty/snowy weather (usually mid-October to late March but will depend on local climate).
BIO.02	Invertebrates Annex II, IUCN EN White clawed crayfish (PBF) Annex II, IUCN DD Stone Crayfish	Creation of settlement pond(s) to intercept construction runoff that would otherwise contaminate the Mala River. Settlement ponds to be designed and constructed to enable sediment and any pollution to be captured and treated prior to its entry into the Mala River.	Annex II and IUCN EN species are PBF. In line with PR6, the project must demonstrate no net loss or ideally a net gain of PBF in the long term	Suitable measures will be in place prior to construction of any parts of the VPP that may cause runoff into the Mala River

Table 5.1: Biodiversity Action Plan - Key Actions				
I.D	**Ecological Receptor**	**Summary of Action**	**Rationale for Action**	**Timing**
BIO.03	PBF Watercourses from Plain to Montane Levels - Zagarski stream (Annex I Habitat)	Restorative management of a nearby stream/river (approx 3km) within the same or nearby watershed. Such an area of stream will need to be identified where clear benefits from management can be demonstrated (e.g litter removal, improve water quality, removal of weirs or small dams, removal of invasive species etc.).	In line with PR6, the project must demonstrate no net loss or ideally a net gain of PBF in the long term. As 1km of a PBF watercourse is likely being culverted, the only suitable option for mitigation/offset is to improve a stream which is in unfavourable condition nearby, over a greater length and over the long term.	An area will need to be identified so that management measures are in place prior to construction of the road through this habitat.
BIO.04	Priority Biodiversity Feature (PBF) Spruce Forest. (Annex I Habitat)	Purchase of an area of forest to the north of the haul road/Rupice, or enter into an agreement with the local Forestry Service to start Restorative Management (RM) of an area of retained forest nearby to improve biodiversity value - to include but not be limited to; selective felling to create fallen and standing dead wood, forced veteranisation of some trees, creating occasional clearings suitable for natural regeneration. Suggested area 50ha so that net gain can be demonstrated in terms of quality of habitat when combined with restoration of decommissioned areas. Core area and buffer area to be established with the core area being 75% of the total area to ensure NNL. Tree nursery to supply locally native trees, shrubs and ground-flora to be set up/funded by the project. Monitor restoration success. Alternative/complimentary option - Adriatic Metals (AM) work with the bodies proposing the new protected area to the north east of the project area to develop and fund an	In line with PR6, the project must demonstrate no net loss or ideally a net gain of PBF in the long term. Offsets should be in place before any impact from felling/ground disturbance occurs.	An area of existing poor condition spruce forest nearby (to the north of Rupice/haul road to ensure connectivity with habitat to the north) will be identified, and options discussed with forestry service as to how the requirements for RM outlined in BIO.04 (below) can be achieved.

Table 5.1: Biodiversity Action Plan - Key Actions				
I.D	**Ecological Receptor**	**Summary of Action**	**Rationale for Action**	**Timing**
		appropriate forest management plan for the requisite type/area of forest.		
BIO.05	Invasive species - Japanese knotweed	Identify, fence off and treat Japanese knotweed (JK) before it has the opportunity to be spread by project activities. Can be treated through herbicide application by trained personnel. Identified stands will require repeated treatment. Monitor treated stands and signs of new plants in project areas.	PR6 requires invasive species to be considered and treated where necessary. JK can spread through small living fragments of the plant becoming rooted and causes detrimental impacts to important habitats, especially to wetland areas where it can spread rapidly.	Prior to any potential impact on invasive plants including transport along haul route.
BIO.06	Any potential receptor	Ecological walkover of project areas by SQE and adjacent buffer areas to ensure no biodiversity features requiring specific or additional mitigation have established since the baseline surveys	Some potential Priority Biodiversity Features or species triggering Critical Habitat are mobile and may have colonised project areas since the baseline surveys were undertaken.	Immediately prior to any vegetation clearance or ground breaking.
BIO.07	Reptiles (Annex IV species) Nose-horned viper Wall lizard Sheltopusik Green lizard Sand lizard Smooth snake	Careful removal of potential refugia under supervision by SQE prior to ground clearance. Strimming of taller or rank grassland and scrub to 150mm in height, removal of arisings and then leave for at least 3 days in suitable weather to allow reptiles to disperse to adjacent habitat. Creation of log and debris piles in retained habitat to provide basking sites for reptiles.	Annex IV species are triggers of critical habitat and therefore there can be no demonstrable impact to the population within the EAAA (i.e. local population) in the long term. No project areas are likely to provide more than occasional or transitory habitat for these species	Vegetation should be strimmed and arisings removed during the reptile active period as far in advance of the works as possible, and kept strimmed (reptile active period is usually April to October in sunny weather, may depend on local

Table 5.1: Biodiversity Action Plan - Key Actions				
I.D	**Ecological Receptor**	**Summary of Action**	**Rationale for Action**	**Timing**
			but individuals may be affected during ground clearance.	climate). Careful removal of potential refugia to be completed immediately prior to and during any vegetation clearance or ground-breaking.
BIO.08	PBF Mountain Hay Meadow - will be lost permanently due to haul road construction.	Identify and purchase (a minimum 5ha) of species rich grassland/ existing upland hay meadow that is currently being lost to vegetation succession/ or being negatively impacted by agricultural practices, or an area of species poor grassland that can be restored. A private parcel of land would be better and a clear demonstration of commitment to biodiversity. Location to be agreed in consultation with Zenica Institute and availability of land for purchase. There are areas retained near the haul road that should be considered, as well as an area near the Veovaca open pit.	In line with PR6, the project must demonstrate no net loss or ideally a net gain of PBF in the long term. Offsets should be in place before any impact ground disturbance occurs. This habitat is also immediately adjacent to the proposed haul road and is vulnerable to residual runoff, dust and nitrogen deposition from trucks which cannot be 100% mitigated.	An area has been identified so that management measures are in place prior to construction of the road through this habitat.
BIO.09	PBF Hydrophilous Tall Herb vegetation (Annex I Habitat)	Manage approx. 1.5ha of this habitat through scrub and tree removal, and light grazing. The habitat is located immediately adjacent to the proposed haul road between Položac and Semizova Ponikva. If this area is not available, location to be agreed in consultation with Zenica Institute and availability of land for purchase.	In line with PR6, the project must demonstrate no net loss or ideally a net gain of PBF in the long term. This habitat is immediately adjacent to the proposed haul road and is vulnerable to residual runoff, dust, nitrogen deposition from trucks. Over the lifetime of the project there is not a satisfactory level of confidence that adjacent PBF hydrophilous tall herb communities	An area has been identified soon so that management measures are in place prior to construction of the road through this habitat.

Table 5.1: Biodiversity Action Plan - Key Actions				
I.D	**Ecological Receptor**	**Summary of Action**	**Rationale for Action**	**Timing**
			would not be affected by the project.	
BIO.10	(Precautionary PBF) Balkan endemic or FBiH, CR, EN or VU plant species Pančić blue sow thistle Heart-leaved ox-eye daisy Red helleborine Balkan endemic Dinaric widowflower Balkan endemic *Crepis conyzifolia* FBiH VU Angelica FBiH VU stemless gentian FBiH CR Marsh marigold	Restorative management of forest, hay meadow and hydrophilous tall herb vegetation will provide the key mitigation and enhancement required to maintain/increase local populations. Additional measure: Prior to ground clearance, during the growing season, individuals of these species will be identified and translocated by the SQE to suitable retained habitat within the EAAA. Populations to be monitored to ensure establishment over a number of seasons.	In line with PR6, the project must demonstrate no net loss or ideally a net gain of PBF in the long term. Species are precautionarily treated as PBF due to their unfavourable conservation status in the region or their endemism in the Balkans.	Identify a SQE that can be present prior to and during vegetation/ ground clearance and who can carry out the translocation of these plants if identified in areas to be cleared.
BIO.11	Annex I birds (PBF) Hazel grouse	Avoidance of vegetation clearance in the breeding season if possible. If not, a check of suitable nesting habitat will be undertaken by the project ecologist and any active nests protected until nesting is complete. The proposed forest RM in BIO.04 will benefit this species in the long term.	Annex I bird species which is a PBF. In line with PR6, the project must demonstrate no net loss or ideally a net gain of PBF in the long term. Species is threatened through habitat loss, poor forestry management and climate change.	Nest check immediately prior to vegetation clearance by SQE if undertaken during the breeding season (March to August inclusive)

Table 5.1: Biodiversity Action Plan - Key Actions				
I.D	**Ecological Receptor**	**Summary of Action**	**Rationale for Action**	**Timing**
BIO.12	Annex IV large mammals (ACH qualifying species) Brown bear Grey wolf Eurasian lynx European wildcat	Culverts and/or crossing points will be installed along the route of the haul road where it passes through the forested landscape to the north east of Rupice. A speed limit will be implemented on the haul road and appropriate signage will be installed along the route informing drivers of the potential presence of large mammals, especially at night. Beneficial management of retained forest away from the haul road will be designed to benefit these species through increased cover, denning site availability and foraging resource. Adaptive management may be employed if monitoring identifies regular road crossing points for large mammals. Appropriate food waste disposal especially at the Rupice project area (more remote) will ensure bears are not attracted to working areas where there could be interactions with personnel. Site personnel to receive briefings about litter disposal and behaviour should they sight these species. Remote camera monitoring of potential mammal crossing points along haul road by SQE, as well as Sajnovicki Kamen and Grcki Kamen to establish use by large mammals and to inform any ongoing mitigation should a regular road crossing point be located.	Annex IV species are triggers of critical habitat and therefore there can be no demonstrable impact to the population within the EAAA (i.e. local population) in the long term. The project areas are not considered critical habitat for these species which evidence shows may utilise the project areas only occasionally. Main potential impact arises from barrier effect of proposed haul road.	Speed limit and signage should be in place prior to first use of the haul road by haulage trucks. Briefings and waste regulations should be in place at the start of project work. Remote camera monitoring will be ongoing along the haul road to identify any areas which may be used as favoured crossing points by large mammals.

Table 5.1: Biodiversity Action Plan - Key Actions				
I.D	**Ecological Receptor**	**Summary of Action**	**Rationale for Action**	**Timing**
BIO.13	Annex IV and IUCN EN bats (lesser horseshoe)	General lighting strategy to ensure the abandoned mine entrance and Building 4 (B4) (administration building) at Droškovac are not blocked or illuminated by construction or operational work. Monitoring to ensure building(s) remain in use.	Annex IV and IUCN EN species are triggers of critical habitat and therefore there can be no demonstrable impact to the population within the EAAA (i.e. local population) in the long term.	Strategy to be agreed with SQE prior to construction work near mine entrance and B4.

6 KEY ACTION ITEMS

6.1 BIO.01 – Ensure a Net Gain for Annex IV Amphibians

Background

In order to replace breeding and sheltering habitat for Annex IV amphibians permanently lost along the Zagarski stream, it will be necessary to create a 'new wetland area'; habitat suitable to support breeding yellow bellied toad, green toad, agile frog, and potentially Greek frog (although for Greek frog see BIO.03).

Other than Greek frog, which is more reliant on running water but will breed in standing water, these generally early-successional species respond well to the creation of new areas of standing water – temporary and permanent ponds with surrounding terrestrial habitat. As the length of stream habitat being lost to facilitate the haul road is approximately 1km in length, to achieve a net gain, 1ha of new breeding habitat will be created for these species.

Actions

1. Timing and Site selection: The new wetland area will be created prior to any impacts on the Zagarski stream. The area chosen for the new wetland will be of existing low ecological value, e.g. species poor grassland, agricultural land, or disturbed habitat, but near to forest or other wetland.

2. Pond Creation: Any number of ponds can be created within the 1ha new wetland area, although a minimum of four ponds will be created and a minimum 0.5ha should be permanently or temporarily inundated with water (see Figure 3). The ponds will be designed to exhibit a range of permanence – some shallow and drying out completely in the summer and some retaining water year-round although none will be stocked with fish. The means of construction can be decided once the area for pond creation has been decided, such as the requirement for lining the ponds using for example a clay or a synthetic liner. Where possible, synthetic liner should be a last resort since it is likely to hinder the establishment of a 'natural' aquatic environment in the long term. The ponds should be created in an area where they will fill up naturally with rainwater, surface water or flood water rather than requiring human intervention. As such, preferred areas would be those with a naturally poorly draining substrate, on relatively flat ground.

3. Vegetation Establishment: Generally, it will not be necessary to establish vegetation in the ponds since there is value in permitting natural vegetation succession, and species like yellow-bellied toad and green toad prefer unvegetated, shallow areas for breeding. The exception would be the translocation of plants or seeds of threatened plants which will be impacted by the project – such as marsh marigold and Angelica which are associated with wetland habitat (also see BIO.10). To help achieve NNL of Hydrophilous Tall Herb vegetation (BIO.09), arisings from a hay cut of an area of this vegetation could be spread around the new wetland area.

4. Refuge Habitat: Within the wetland area, partially buried log and/or stone piles will be created to provide refuge and hibernation habitat for amphibians, as well as reptiles; helping to achieve a net gain in habitat for Annex IV reptiles (see BIO.07).

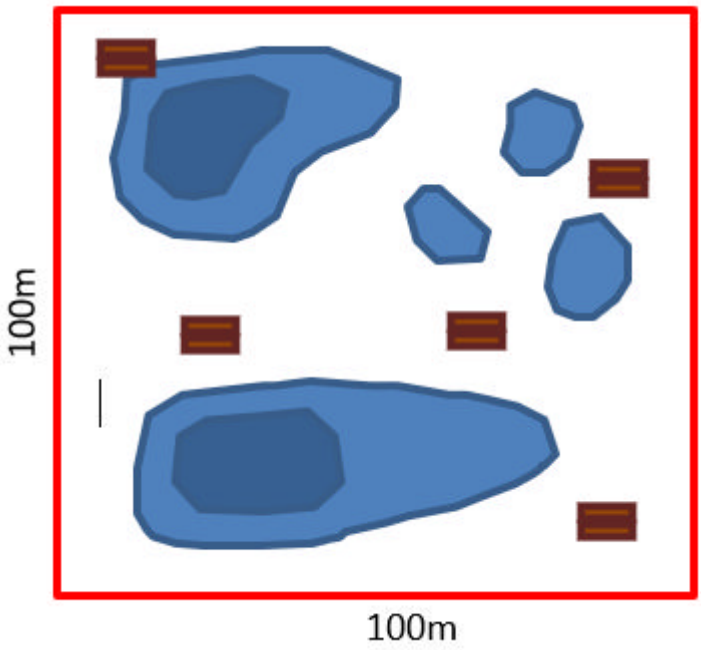


Figure 3: Example of a potential 1ha new wetland area (can be modified to topography).

NB: Light blue – shallow (temporary) water; Dark blue – deeper (permanent) water; Brown – log/stone piles. Area within red line – natural regeneration, planting of marsh marigold, Angelica and scattering of Hydrophilous Tall Herb vegetation arisings.

5. Translocation: SQEs will be present prior to and during clearance work along the Zagarski stream to check refuge habitat (under stones, logs, deep leaf litter etc) and to capture amphibians. Captured amphibians will be moved to the new wetland area and placed within log/stone piles.

6. Monitoring: The new ponds will be monitored annually by the local SQE in the spring/summer months to ensure establishment of the target species for the first 5 years with a review after 5 years when there may be less frequent monitoring. Where additional intervention is required, this can be addressed through the dynamic action plan process. For example after a number of years, one or more of the ponds may require re-excavation or vegetation removal. For Greek frog, see BIO.03.

6.2 BIO.02 – Ensure a Minimum NNL of PBF Invertebrates; White Clawed Crayfish (WCC) and Stone Crayfish

Background

The Mala River is known to support PBF white clawed crayfish. It is possible that the Bukovica stream supports stone crayfish (precautionary PBF)[5]. In order to ensure NNL of PBF, it will be necessary to prevent impacts to the quality and quantity of water within the Mala River and the Bukovica as a result of the project.

Actions

1. Design and construct settlement pond(s): Appropriately designed sediment settlement pond(s) will be created downstream from the proposed Tailings Storage Facility (TSF) to ensure any runoff from construction is captured and treated appropriately before reaching the Mala River. The pond(s) will be designed to the appropriate engineering specification as per the TSF design.

2. Crayfish Survey: Survey for crayfish downstream of the abstraction point on the Bukovica, monitoring of water levels and adaptive mitigation where required if native crayfish species are present.

3. Water Quality Monitoring: Water quality within the settlement pond(s) and the Mala River downstream from the pond(s) will be monitored during construction and operation of the TSF to ensure any contaminants entering the ponds can be treated prior to water being released into the Mala River.

4. WCC Monitoring: In addition, annual monitoring of white clawed crayfish will be undertaken by a SQE for the first five years with a review after this period when there may be reduced monitoring. The results of the water quality monitoring, crayfish monitoring, and any additional mitigation actions prescribed within this BAP.

6.3 BIO.03 – Ensure a Minimum NNL of PBF Watercourses from Plain to Montane Levels

Background

The Zagarski stream meets the PBF criteria as an Annex 1 habitat. Approximately 1km of the Zagarski stream will be permanently culverted to create the haul road. Impacts to the species of amphibians that this stream supports are addressed in BIO.01. In order to ensure NNL of PBF habitat, it is necessary to demonstrate that another watercourse with relatively low ecological value within the EAAA can be improved such that it meets the Annex I criteria. As it will not be possible to create a new stream, an existing stream in poor condition must be improved through management over a minimum 3km length. Action 1. and the specific action plan outlining management prescriptions mentioned in Action 2. below must be in place prior to any construction work along the Zagarski stream. Management actions and monitoring will be ongoing throughout the project.

An engineering study will be undertaken as part of the detailed design work by Saraj inženjering to confirm the approach to be taken to culvert this stream, taking environmental, social and economic factors into consideration. As far as feasibly possible a culvert that will allow the stream to maintain

[5] Survey work is ongoing and results will be provided in an updated BAP.

ecological integrity and the existing hydrological regime, through a natural substrate bottom will be selected. It is likely that a combined approach will be taken to implement environmental requirements whilst ensuring the occupational safety of the road is maintained and the economic feasibility of selected culverts.

Actions

1. Identification of Habitat: Identify in consultation with the in-country SQE, the local Fishing Society and local government/NGOs, a suitable watercourse which can be demonstrably improved through management interventions. Enter into a suitable funding or land purchase agreement.

2. Management Prescriptions: A specific action plan will be created once Item 1 has been confirmed. Suggested management prescriptions to be carried out or funded by Adriatic Metals may be as follows but not necessarily be limited to;

    - Bankside vegetation management – coppicing, creation of in-stream dead wood habitat;
    - Weir or man-made obstacle removal – remove any unnecessary man-made fish migration blockages where possible and appropriate;
    - Fish passage funding/ installation – an existing hydro-electricity scheme on the Mala River would benefit from installation of a fish passage;
    - Litter removal – removal of plastic and other man-made items from within the water and bank-side vegetation;
    - Invasive species control and/or removal – any Japanese knotweed, Himalayan balsam *Impatiens glandulifera,* other invasive plants controlled or removed;
    - Feasibility study into installation or funding of sewage treatment – if a particular source of water pollution is identified, funding treatment if possible and appropriate; and
    - Locally native aquatic species (re)introduction - e.g., fish native to the watershed that have gone locally extinct or require additional stocking.

3. Monitoring: The stretch of stream/river that will be improved by the project will be monitored by the SQE (in combination with the local Fishing Society/local government if appropriate) to ensure a positive outcome is achieved and suggest any additional interventions that can be added to this action plan. As this is the preferred habitat for Greek frog, work on improving this habitat will also help to sufficiently mitigate the losses along the Zagarski stream.

6.4 BIO.04 – Ensure a Minimum NNL of PBF Acidophilous Spruce Forest

Background

The majority of direct and indirect impacts from the project are on this habitat type. Historically the habitats in the region would have been part of a rich mixed forest system; the Dinaric Mountains

Mixed Forests Ecoregion. The primary forests have been heavily exploited in recent history for timber, initially for the iron smelting which took place intensively in Vares, and during and following local conflicts. Locally the forests were clear-felled and replanted with a more commercially targeted species mix which is dominated by Norway spruce, but many of the other constituent species are still present in small numbers. The vegetation type is therefore analogous to the UK habitat 'plantation on ancient woodland sites' (PAWS); where there is a largely continuous history of forest cover, but the structure and function has been degraded through poor management. As such, there is great potential for the quality of the forest to be enhanced through restoration management.

The project will require the direct loss of 78.3ha of this habitat, approximately 40ha of which will be restored in the long-term following decommissioning. It is accepted that the restored forest will take many decades to achieve the desired ecological condition where it can be determined to meet the definition of a PBF. There will be a net loss of forest area of 38.3ha of relatively poor-quality spruce forest associated with the haul road construction. As such to realistically demonstrate a minimum of NNL, an area of 100ha of existing degraded spruce forest will be managed restoratively.

The restoration management will also help to achieve a minimum of NNL with regards hazel grouse (BIO.11) and large mammals (BIO.12).

Actions

1. Identification of Habitat: Identify in consultation with the SQE and the local Forestry Commission, an areaof degraded spruce forest that can be purchased and managed, or funding and management agreed with the landowner. The area should be fairly near to, but to the north of the proposed haul road to ensure the restored habitat is within the EAAA but not affected by barrier impacts and that the targets of BIO.11 can be met within the project EAAA. The total area entered into RM will be minimum 100ha with core area and buffer areas (discussed below).

   A complimentary option would be to also provide funding towards the protection and restorative management of an area of degraded forest within the proposed Zvijeda/Konjuh Park to the north. This would enable a reduction in the area required for restoration management near to the project area up to 50%, so long as the total area is 100ha and that a minimum of 50ha is entered into RM somewhere to the north of the haul road. In addition, the local Forestry Commission could be incentivised to increase the area under RM if wood products could be sold with a 'sustainable forestry' certification, for example FSC.

2. Set up/fund a locally native tree, shrub and ground-flora nursery which can be used to provide plants for restoration. Seeds can be collected from local habitats in consultation with the SQE.

3. Restorative Management (RM): RM could include but not be limited to[6]:

- Establishment of a core zone occupying a minimum 75% of the area. Establish a buffer zone around the core area.
- Core area:
    - No extraction of timber in perpetuity.
    - Thinning, creation of standing and fallen dead wood – 5% of trees to be felled and left as fallen or leaning dead wood, 5% to be ring-barked and left as standing dead wood (in addition to glades, see below).
    - Forced veteranisation of 1% of trees – e.g. crown removal, creation of cavities.
    - Creation of small glades 20x20m to promote dense natural regeneration – 5% of area.
    - Planting of occasional locally grown beech *Fagus sylvatica*, black pine *Pinus nigra subsp. nigra var. nigra,* sycamore *Acer pseudoplatanus*, silver fir *Abies alba* in glades, and understorey species.
- Buffer area:
    - Creation of fallen dead wood – 5% of trees to be felled and left as fallen dead wood (in addition to glades, see below).
    - Creation of small glades 20x20m to promote dense natural regeneration – 5% of area.
    - Planting of locally grown beech, sycamore, silver fir, understorey species in glades.
    - Limited harvesting of trees (30% permitted to be harvested, the rest left in perpetuity).

Selection of which trees to manage will be made in consultation with the SQE and Forestry Commission in order to preserve any existing ecological interest (e.g., trees with existing woodpecker holes/squirrel dreys/raptor nests). An agreement has been signed between Adriatic Metals and the Forestry Commission to undertake this programme of work (Appendix 2).

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

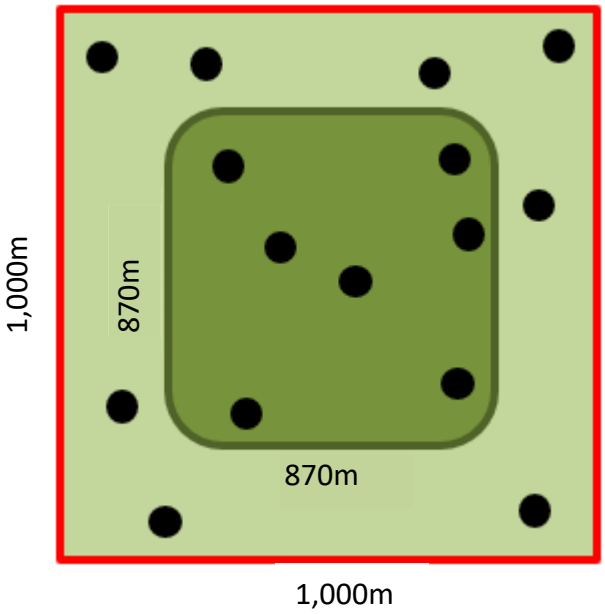


Figure 4: Example of 100ha RM area of forest. Can be adapted in shape depending on site selection.

NB: Dark green – core area; Light green – buffer zone; and Black dots – glades.

4. Monitoring: A SQE will undertake monitoring surveys for the effectiveness of the RM, including habitat mapping, monitoring changes in bird assemblages, ground flora, invertebrates and mammals. Amendments to the action plan can be made where necessary if additional ecological features are identified in need of protection or enhancement.

5. Forest Restoration Following Decommissioning: The Rupice project area and the VPP, including the TSF, will be restored following decommissioning. Restoration will utilise a mixture of natural regeneration and replanting of native species, including from the nursery, which will permit a more dynamic emerging forest than planting alone would achieve. Natural regeneration allows areas of dense and open forest to establish with a prior period of grassland and scrub development which are also of value as 'intermediate' habitats and as migratory corridors for species of more open habitats.

In terms of species targeted for planting, the reforestation scheme will aim to diversify the species mix towards the local Dinaric Mixed Mountain Forests ecotype for that elevation, and also include understorey shrub species. For example, prior to exploitation the forest is likely to have been a more open mixture of beech, Norway spruce, silver fir, sycamore, Bosnian maple *Acer opalus subsp. obtusatum*, hop-hornbeam *Ostrya carpinifolia* with some native birch *Betula spp* and alder *Alnus spp*. Trees will not be planted at high density, to allow a forest ground flora to develop which can be supplemented by understorey and ground flora species grown in the nursery.

Photo 6.1: Examples of closed and open coniferous/mixed forest showing mature trees, standing and fallen dead wood, young regeneration and extensive ground flora.

Figure 5: Example of forest planting and natural regeneration.

NB: Light green – existing forest; Mid green – block planting of trees; Orange – glades sown with locally harvested green hay; and White – areas left to natural regeneration.

6.5 BIO.05 – Ensure Project Activities do not Spread Invasive Species

Background

Japanese knotweed is located adjacent to project working areas, including the existing haul road. Vehicles using the haul road risk spreading Japanese knotweed on wheels of trucks or excavators, or via accidental movement of contaminated material. Japanese knotweed (JK) 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 out less competitive species, especially in damp areas and may affect PBFs.

Actions

1. Identify and Treat JK: SQE will identify all areas of Japanese knotweed within or adjacent to project areas through an update survey. SQE will advise on a suitable buffer zone where space allows and JK will be appropriately fenced off to demarcate an exclusion zone and prevent accidental spread. An appropriate invasive species management plan will be created. Where there is a risk JK will be spread by project activities it will be treated in situ with regular herbicide application during the growing season, by a suitably qualified person. Control of JK is usually through application of a glyphosate-based herbicide three times annually during the growing season; May to September for a number of years.

2. Monitoring: A SQE will monitor working areas and transport routes for JK (and other invasive species). Any new stands will be appropriately marked and treated in line with the management plan.

Photo 6.2: Examples of Japanese knotweed.

6.6 BIO.06 – Ecological Walkover

Background

Many species that may trigger the designation of PBF or Critical Habitat are mobile. Whilst a given species may have been absent from project footprint areas or adjacent habitat during the baseline surveys, there is a chance additional features may establish prior to works.

Actions

1. A SQE will undertake an update ecological walkover of project areas immediately prior to vegetation clearance or earth works to ensure no ecological features requiring additional avoidance or mitigation are present. Any required actions will be discussed with Adriatic Metals and added to the BAP.

6.7 BIO.07 – Inspection for and Translocation of Annex IV Reptiles

Background

Annex IV reptiles were recorded during the baseline surveys, all of which are relatively common and widespread nationally and locally. Generally, Project areas, being largely dense spruce forest, are considered sub-optimal for reptiles and local populations will not be impacted significantly as a result. Parts of the haul road pass through hay meadow and forest edge which may provide basking and sheltering habitat for occasional or transient reptiles. The actions undertaken for BIO.01, BIO.08 and BIO.09 will also help to adequately address impacts on reptiles.

Actions

1. Avoid Disturbance: Vegetation clearance and ground-breaking will be avoided during the reptile dormant period (October to April) wherever possible at forest edge or grassland areas. Grassland within the Project footprint will be strimmed to approximately 150mm in height and left for a few days to allow reptiles to disperse to retained habitat before construction commences.

2. Walkover and Translocation: SQE(s) will be present prior to and during vegetation clearance/construction work along the haul road where it passes through grassland and forest edge, to check refuge habitat e.g. log piles and rocks and to capture any reptiles. Reptiles will be encouraged to move to or manually moved to retained habitat or be captured and moved to the new wetland area and placed within log/stone piles if necessary.

3. Monitoring: It should not be necessary to monitor reptiles since no significant impact is expected as a result of the Project, but any species identified during the amphibian monitoring at the new wetland area will be noted.

6.8 BIO.08 – Ensure a Minimum NNL of PBF Upland Hay Meadow

Background

This habitat is located along the route of the haul road and approximately 2.5ha will be lost permanently, with the potential for adjacent retained habitat to be impacted negatively through dust and exhaust emissions. To adequately mitigate these impacts, it is necessary to offset the loss. The actions in BIO.08 will also help to address BIO.10.

Actions

1. Identify a Suitable Area: Adriatic Metals will acquire land or fund the restoration and ongoing management of a minimum 5ha area of existing meadow that is either at risk of being lost to natural vegetation succession or to poor forestry/agricultural practices. Potential areas have been identified during the baseline surveys and can be confirmed in consultation with the in-country SQE.

2. Grassland Management: Once an appropriate area has been identified and purchased/funding agreed, a site-specific management plan will be created for the life of the Project which may include but not be limited to:

- Engagement of local grazier/conservation organisation;
- Installation of fencing and grazing animal shelter/water supply if required;
- Control of scrub and tree regeneration and removal of arisings;
- Cessation of fertilisation, burning and herbicide use (except any invasive species).
- Localised topsoil stripping if required;
- Grassland cutting and removal of arisings (ideally one cut per year in late summer).
- Low intensity grazing (ideally by cattle, which are generally better for botanical conservation); and
- Translocation of e.g., Balkan endemic Dinaric widowflower, *Crepis conyzifolia* and stemless gentian if locally absent from the new area of managed grassland.

3. Monitoring: A SQE will monitor the condition of the grassland annually in summer, over the lifetime of the Project and ascertain whether any additional interventions are required, to be added to the action plan.

6.9 BIO.09 – Ensure a Minimum NNL of PBF Hydrophilous Tall Herb vegetation

Background

This habitat is located immediately adjacent to the route of the haul road and has the potential to be negatively affected through dust, exhaust emissions and changes to the local hydrology which may alter the structure and composition of this habitat. To adequately mitigate these impacts, habitat management is required.

Actions

1. Adriatic Metals will acquire land or fund the restoration and management of a minimum 1.5ha area of existing hydrophilous tall herb vegetation that is either at risk of being lost through natural vegetation succession or to poor forestry/agricultural practices. The vegetation has been identified during the baseline surveys adjacent to the proposed haul road and can be confirmed in consultation with the in-country SQE and landowner.

2. Vegetation Management: Once an appropriate area has been identified and purchased/funding agreed, a site-specific management plan will be created for the life of the Project which may include but not be limited to:

   - Engagement of local grazier/conservation organisation;
   - Installation of fencing and grazing animal shelter/water supply if required;
   - Control of scrub and tree regeneration and removal of arisings;
   - Cessation of fertilisation, burning and herbicide use (except any invasive species);
   - Grassland cutting and removal of arisings (ideally one cut per year in late summer); and
   - Low intensity grazing (ideally by cattle, which are generally better for botanical conservation).

3. Monitoring: A SQE will monitor the condition of the hydrophilous tall herb vegetation annually in summer, over the lifetime of the Project and ascertain whether any additional interventions are required, to be added to the action plan.

The areas chosen and agreed with the Forestry Service for BIO.08 and BIO.09 are shown on Figure 6.

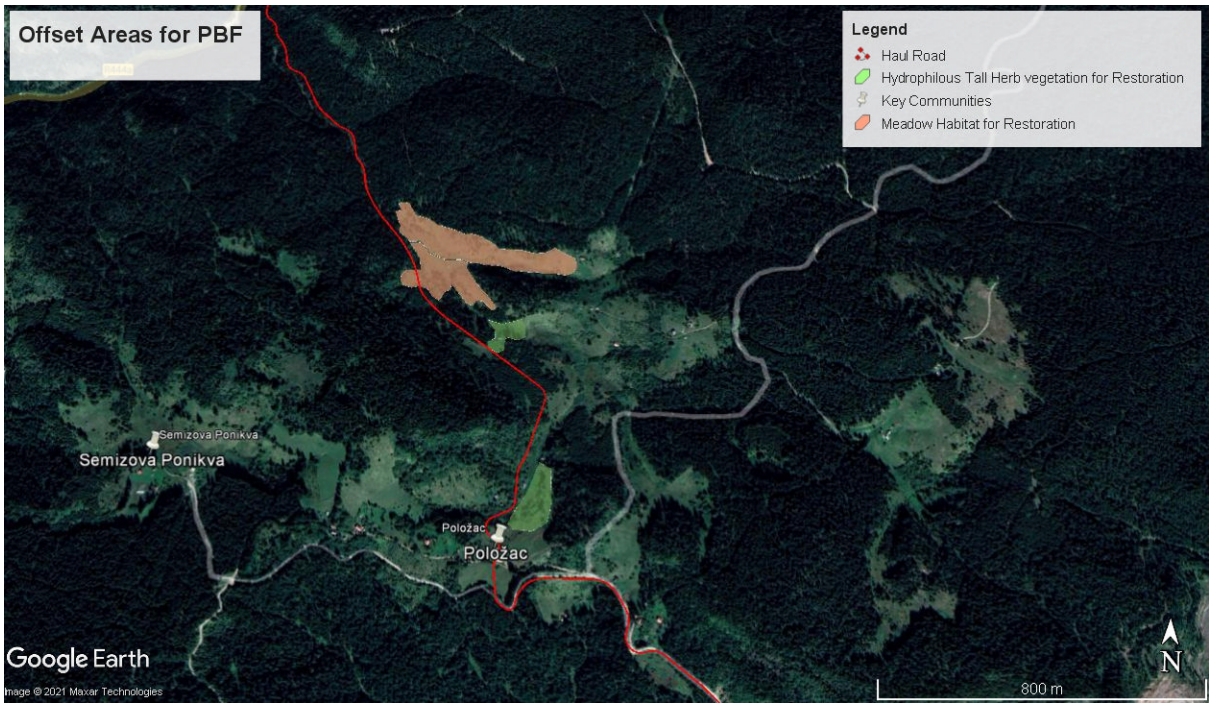


Figure 6: Agreed Habitat Management Areas

6.10 BIO.10 – Ensure a Minimum NNL of Balkan Endemic, and Nationally Threatened Plants

Background

Eight nationally threatened or Balkan endemic plant species have been identified during the baseline surveys. Whilst the Project is not expected to have a significant impact on the local populations of these species, mitigation measures will look to achieve a net gain for the populations in the EAAA. These species are Pančić blue sow thistle, heart-leaved ox-eye daisy, red helleborine, Dinaric widowflower, *Crepis conyzifolia*, Angelica, stemless gentian and marsh marigold.

The habitats of these species are being conserved/enhanced through management of retained habitat and/or creation of new habitat within the EAAA. As such even without translocation the local populations of these species are expected to be maintained.

Actions

1. Walkover and Translocation: SQE(s) will undertake a walkover prior to vegetation clearance/construction and individuals of these species translocated through digging up and replanting, or collecting seed to establish new plants elsewhere in nearby retained habitat appropriate to each species. For the species associated with wetland

(Angelica and marsh marigold) a new population will be established at the new wetland area (BIO.01).

2. Monitoring: Restored and managed habitat, as well as translocated or new populations will be monitored annually by the SQE to ensure successful establishment, and additional cuttings or seeds harvested to boost the populations as necessary.

6.11 BIO.11 – Ensure a Minimum NNL of PBF Hazel Grouse

Background

Hazel grouse is an Annex I species that has been recorded from the spruce forest and forest edge. This species prefers mixed forests with a rich understorey and varied age structure. Therefore, this species stands to gain from the forest restoration work undertaken as part of BIO.04 in the short term, as well as the restoration of the Project footprint areas in the longer term.

Actions

1. Walkover and Avoidance of Nests: Vegetation clearance within the bird breeding season will be avoided where possible (March to August inclusive). If this is unavoidable, SQE(s) will undertake a walkover prior to vegetation clearance/construction if within the nesting period. If any active nests are encountered, the area will be avoided with a suitable buffer and protected until the nesting attempt is complete, as certified by the SQE. It is expected that this species will gain from the forest restoration work and as such monitoring is unlikely to be necessary.

6.12 BIO.12 – Adequately Mitigate Impacts on Annex IV Mammals

Background

The baseline surveys have established that none of the Project areas provide more than transient habitat for Annex IV terrestrial mammals (which are ACH qualifying species). These species are brown bear, grey wolf, Eurasian lynx and European wildcat. Although very little information is available on the distribution of large mammals in BiH, areas known to be critical for these species are located several kilometres to the north of the Project associated with the proposed national park, and potentially two caves; Sajnovicki Kamen and Grcki Kamen to the east of Rupice. The haul road bisects the habitat to the north from the caves and as such the barrier effect from the haul road is the main identified impact.

The proposed forest RM associated with BIO.04 will improve foraging and denning habitat for these species in the short to long term through increasing cover and foraging resources within an area of largely degraded forest.

Actions

1. In the section of road between Rupice and Semizova Ponikva a number of crossings for large mammals will be installed to ensure the connectivity between denning habitats and the forested area to the north is maintained. It is anticipated that approximately 5 crossings will be required along this section of road to ensure sufficient linkage, designed in accordance with published guidance7. Crossings may be box culverts or ecological bridges, dependent on the topography and engineering characteristics of the location. All crossings will be protected and designed in such a way to incorporate with the surrounding landscape and vegetation. Box culverts will be a minimum of 2.5m high and 3m wide, whilst ecological bridges will be a minimum of 7m wide, all crossings will have a 100m section of fencing, or natural fencing, on either side to lead wildlife to them. The exact location, number and specification of the culverts will be determined by Saraj inženjering during the detailed design phase, and will be guided by the in-country biodiversity specialist to ensure the effective placement of crossing locations.

2. Signage: Installation of appropriate signage at points along the haul road, especially the section towards Rupice which passes through coniferous forest.

3. Personnel Briefings: SQE to be involved in briefing the haul road drivers and other Project personnel re the potential for the presence of large mammals, their conservation value, and what measures are expected of them during the Project. These measures may include but not be limited to:

    - Enforcement of appropriate speed limits on haul roads;
    - Enforcement of appropriate litter disposal in designated areas;
    - Continuous Professional Development (CPD) briefings on the ecological importance of the local area and the Annex IV mammals the region supports; and
    - Briefing personnel re the importance of legal hunting.

4. Monitoring: Adriatic Metals will keep a record of any large mammals or tracks observed by haul road drivers or other Project personnel, including the date and location. This information will be passed to the SQE in order to map any areas where a further reduced speed limit would be desirable, possibly limited to certain months of the year.

5. Monitoring by Remote Cameras: The SQE will place a minimum of 6 remote cameras along the haul road between Polozak and Rupice to monitor usage by large mammals and to inform any ongoing mitigation should a regular road crossing point be located. If accessible, remote cameras could also be placed at the caves at Sajnovicki Kamen and Grcki Kamen to establish use by large mammals and determine if they should be treated as critical habitat features.

[7] http://www.elkhornsloughctp.org/uploads/files/1182793716carnivoresafepassage.pdf

Figure 7: Examples of road signage

6.13 BIO.13 – Avoid Impacts on IUCN EN and Annex IV Bats

Background

Baseline surveys indicate that the majority of the buildings at the Droškovac area are not suitable for roosting bats, other than Building 4 (B4); the abandoned administration building, and the abandoned mine tunnel.

Actions

1. Lighting Strategy: Creation of a strategy to be confirmed with the SQE, that B4 and the abandoned mine tunnel will be retained and will not be illuminated at night-time during construction or operation. Retention of dark corridor of habitat between mine tunnel and surrounding forest.

2. Monitoring: SQE to monitor building B4 and the mine tunnel to ensure continued usage by bats during construction and operation. Any additional mitigation to be added to the action plan.

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