

COMPATIBILITY ASSESSMENT

of

INVESTMENT PROPOSAL FOR MINING AND PROCESSING OF POLYMETAL ORES FROM THE ROZINO DEPOSIT, TINTYAVA PLA, SITUATED IN THE LANDS OF THE ROZINO VILLAGE AND GUGUTKA VILLAGE, IVAYLOVGRAD MUNICIPALITY, HASKOVO DISTRICT.



Customer: Tintyava Exploration AD

December, 2025

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List of Abbreviations

Abbreviation	Meaning
BSPB	Bulgarian Society for Protection of Birds
BSS	Bulgarian State Standard
GIS	Geographic Information System
SG	State Gazette
EIAR	Environmental Impact Assessment Report
IDAR	Impact Degree Assessment Report
BA	Biodiversity Act
PIAA	Public Information Access Act
PZ	Protected zone
Mineral Resources Act	Mineral Resources Act
IP	Investment Proposal
RPM	Restituted Property Map
FMP	Forest management projects
ME	Ministry of Energy
MOEW	Ministry of Environment and Water
DBW	Drilling and Blasting Works
DCM	Decree of the Council of Ministers
NCS	Nature-conservation status
RIEW	Regional Inspectorate of Environment and Water
SZF	Standard Zone Form
SCE	Specialized Committee of Experts

Introduction

This Impact Degree Assessment Report (IDAR) for the investment proposal for Mining and processing of polymetal ores from the Rozino Deposit in the Tintyava PLA situated in the lands of the Rozino and Gugutka Villages in the Ivaylovgrad Municipality, Haskovo District, was drawn up pursuant to Article 31, paragraph 1 and paragraph 4 of the Biodiversity Act (BA, SG issue 77/2002 with most recent amendments and supplements in SG 70/2024) and in accordance with Article 2, paragraph 1, item 1 and Article 39, paragraph 3 of the Regulation on the Terms and Procedures for Assessment of the Compatibility of Plans, Programs, Projects and Investment Proposals against the Conservation Objectives of Protected Areas (*Regulation on CA*, adopted with Decree of the Council of Ministers No. 201/31.08.2007, SG issue 73/2007 with most recent amendments and supplements in SG issue 106/2021).

Concerning the investment proposal, the Customer has deposited with the Haskovo RIEW a notification in accordance with Article 4, paragraph 1. of the Regulation on the Terms and Procedures for Conducting Environmental Impact Assessments (SG, issue 25/2003, amendment and supplemented in SG issue 3/2005, ... with most recent amendments and supplements in the SG, issue 9/2024).

The Minister of Environment and Water has requested by letter ref. 99-00-587/27.05.2024 that the Director of RIEW Haskovo forward the entire case file to the MOEW, the assumption being that the Minister is the competent authority as regards this procedure. The Director of RIEW Haskovo has complied with this request by way of Letter ref. ПД-279-(38)/2023/29.05.2024.

The IP area is situated in two protected areas (PA) of the National Environmental Network Natura 2000:

- 'Rhodopi - East', code BG0001032, for protection of natural habitats and wild flora and fauna;

- 'Byala reka', code BG0002019, for protection of wild birds.

By way of letter Ref. OBOC-68-17/18.11.2024, the MOEW orders the drawing up of an Impact Degree Assessment Report (IDAR) for the investment proposal and its impact on the subject and goals of affected protected areas situated in the IP area. This Impact Degree Assessment Report was prepared pursuant to MOEW letter Ref. No. OBOC-68-17/18.11.2024 (Attachment No 1).

This Impact Degree Assessment Report is consistent with the requirements of Article 23, paragraph 2 of the *Regulation on CA* and with the instructions issued by the MOEW in Letter Ref. No. OBOC-68-17/18.11.2024 (Attachment No 1).

I. Description of the Investment Project Proposal.

I.1. Location of the Investment Project Proposal

The Rozino deposit in the Tintyava PLA is situated in the lands of the villages of Rozino, Gugutka, Ivaylovgrad Municipality, Haskovo district, and is 1.2 km. to the south of the Rozino village. The border with Greece is to the east and south, and the municipalities of Lyubimets, Majarovo and Krumovgrad are situated to the north and west. The Rozino Project is located approximately 350km (by road) east-southeast of the city of Sofia.

The Rozino Deposit region is encircled to the south by the steep rocks of the Tashlaka locality and is divided by the Byala River and its tributaries which flow into the regional watershed area of the Arda river. The average altitude in the deposit area is approximately 470 m. (in the north) and 300 m. (in the south).

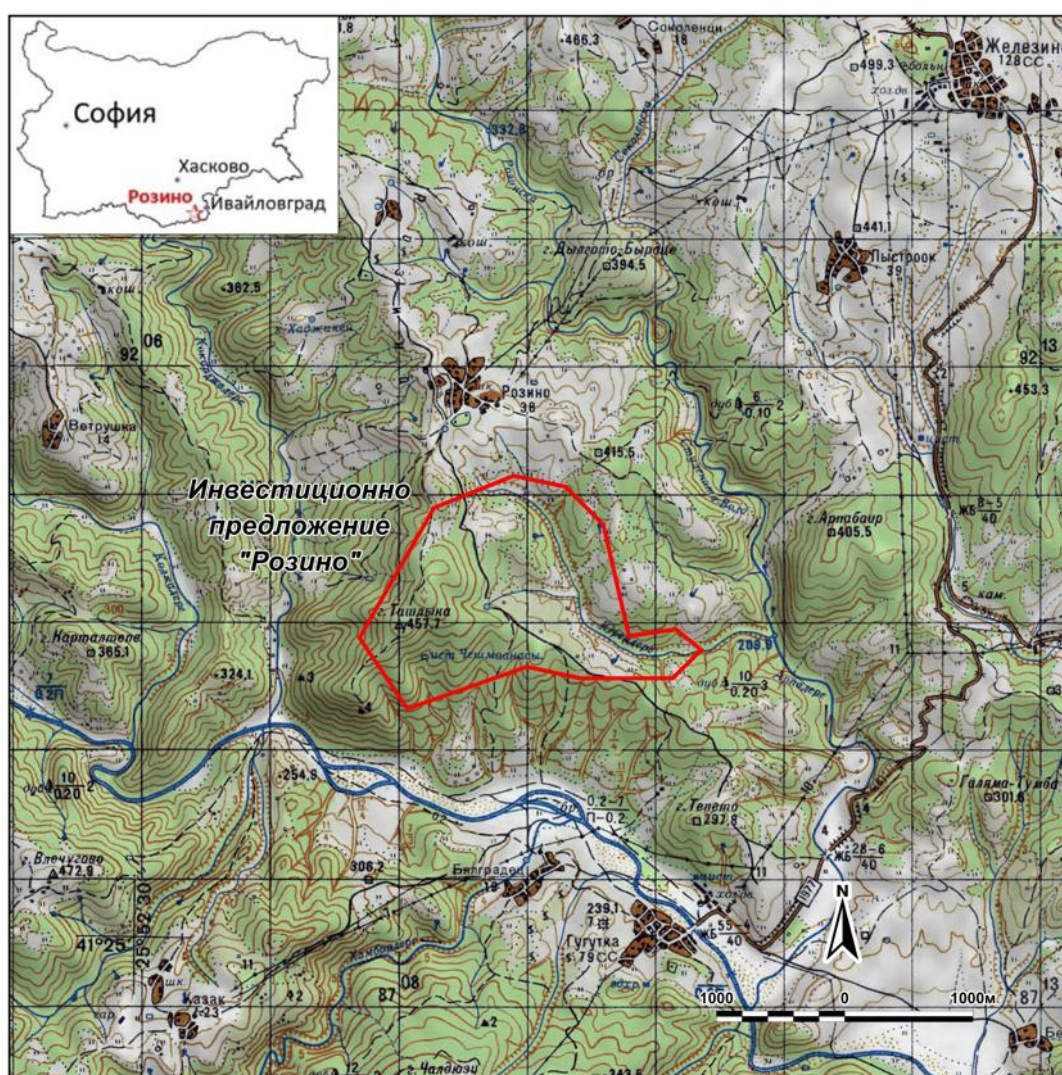


Figure I.1-1. Location of the Rozino Deposit, Tintyava Property

The topography in the area is low-mountainous and hilly, with level hills being prevalent. Low ridges and valleys are well pronounced. The Maglenik height is home to Kodjaele, the highest peak in the area, of 1,267 m. The elevation above sea level varies between 70 and 700 m., averaging at 320 m. The topography at the level of the Tashlaka peak is highly indented by the Byala reka river and its tributaries - Dermen dere, Kokarja dere, Arpa dere, Hambar dere, Yuruklerska, etc. Tectonically controlled river valleys dominate the river basins, whose rivers, flowing from different directions, enter the main regional river - Arda.

The area belongs entirely to the Gyumyurdjin-Maglenishka geographic sub-area.

North-westerly winds prevail and are active along the valleys and the mountain ridges. Foehn is also present. The annual average precipitation varies widely between 800 and 1,200 mm. Its high is during the autumn and winter, in November and December. Often storms reach 100 mm. over 24 hours. This is one of the reasons for sheet erosion. Snow stays on the ground for 5 to 10 days per year. The surface run-off rate is 5 to 25 l/sec./1 m².

The overall intended concession area amounts to **275 ha**, of which **118 ha** will be disturbed. The buffer area covers 157 ha. Some facilities will be developed in areas already processed/disturbed without taking over new areas, with the 'overlap' being 261,9 ha. The individual infrastructure is distributed as follows:

No.	Sites	Areas, ha x 10
1	Processing plant	51.4
2	Open pit	261.9
3	External topsoil stockpile 1	14.5
4	External topsoil stockpile 2	37.0
5	External waste rock stockpile (overburden)	247.0
6	Internal overburden stockpile (backfill).	133.2
7	External process tailings storage facility.	438.4
8	Internal (backfill) process tailings storage facility.	128.7
9	Contact water reservoir. Includes: an external processing waste storage facility, a mine, a processing plant and collection ditches. Comprises a supernatant water body and retaining dam).	9.1
10	Clean water reservoir and collection ditches (lake and retaining wall)	62.4
11	Service roads (external to the above infrastructure)	57.3
12	Overlapped areas - backfilling-internal stockpile and internal process tailings storage facility (this area is deducted from the total area!).	-261.9
Total required area:		1179.0

No mining will be carried out in the buffer zone. The buffer zone will provide protection for the facilities and plants and will restrict accidental access by people and animals. It will ensure compliance with the obligations arising from the Underground Resources Act for further exploration with a view to optimal extraction of reserves and resources from the subsurface.

A visual presentation of the IP elements, which are at the concept phase, is made with the layout plan presented on Figure I.1-2. As the project advances with transition toward detailed design, the outlines of individual sub-sites may change insubstantially, within the evaluated terrain, without changes to the impact analysis.

In keeping with the requirements set forth in letter No. IIY-02-231/1/18.12.2024 of the West Aegean Region Basin Directorate, provisions should be made for construction of drainage ditches peripheral to the mine field and to the open pit must be provided for in order to collect precipitation and snow-melt run-off from higher levels to prevent entry of surface water into the pit. It should be noted that they are visualised in the layout plan hypothetically, given the current topography of the terrain. Their exact locations will be determined following engineering calculations and development of specific technical designs to ensure maximum efficiency in respect of the technical parameters of the future overall design. This is the reason for occasional deviations of the contours of hypothetical ditches outside the proposed concession area. These deviations will be corrected during the technical design phase and will be aligned with and constructed within the submitted concession area.

The coordinates along the outline of the future license are presented in the table below.

Table
Registry of
point
the design
(BGC 2005
system)

The IP
presented on

Realizing
investment
requires
of on-site roads
roads. The
will be

ID	EAST	NORTH	Lon	Lat
1	408811	4589180	25.908290	41.449019
2	409216	4589094	25.913149	41.448299
3	409510	4588798	25.916717	41.445662
4	409710	4587930	25.919241	41.437868
5	410076	4587982	25.923614	41.438381
6	410274	4587821	25.926004	41.436948
7	410050	4587600	25.923359	41.434934
8	409332	4587600	25.914766	41.434853
9	408913	4587690	25.909739	41.435616
10	407994	4587363	25.898795	41.432568
11	407609	4587935	25.894091	41.437674
12	408190	4588930	25.900899	41.446702

I.1-2.
boundary
coordinates of
license area
coordinate

layout plan is
Figure I.1-2.

the
proposal
construction
and access
Rozino mine
connected to

the road system along the existing unsurfaced road running across the Rozino and the Konnitsi villages and linking them to the towns of Ivaylovgrad and Krumovgrad via the II 59 road.

The measured reserves and resources continue to an approximate depth of 195 m., with around 95% of them lying at less than 120 m., with approximately 1% being below 140 m. **The planned maximum depth of the pit is approximately 140 m from the terrain surface.**

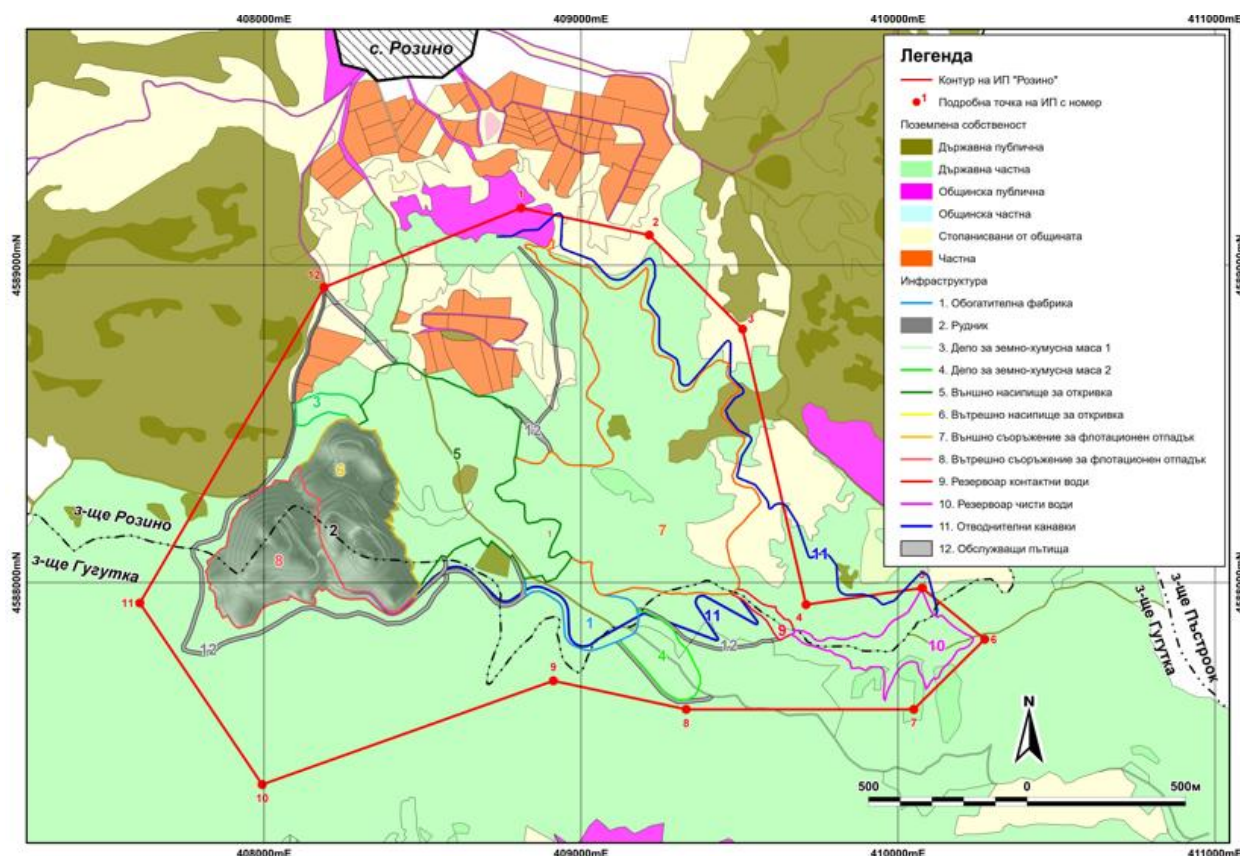


Figure I.1-2. IP layout plan

Figure I.1-3. presents a cross section of the pit with designated elevations.

RL 315 is the elevation of the fresh water reservoir and RL 325 is the elevation of the mixed water reservoir.

I.2. Description of the project

Geological engineering, hydrogeological, geological and other field testing and laboratory testing have been carried out while studying the mining and processing conditions for operation of the deposit. Open pit mining will be employed, given the dip, situation and depth of the natural resource.

The intended IP parameters are as follows:

- ✓ No mining operations have been carried out in the Rozino deposit, Tintyava PLA;
- ✓ No processing plant has been constructed;
- ✓ Access by transport to the deposit will be along existing roads, with partial construction of new roads;
- ✓ There are no electricity and water supplies to the mine.
- ✓ Drilling and blasting will be employed during the mining.
- ✓ The deposit will be operated in accordance with duly approved overall operation and closure design/plan.

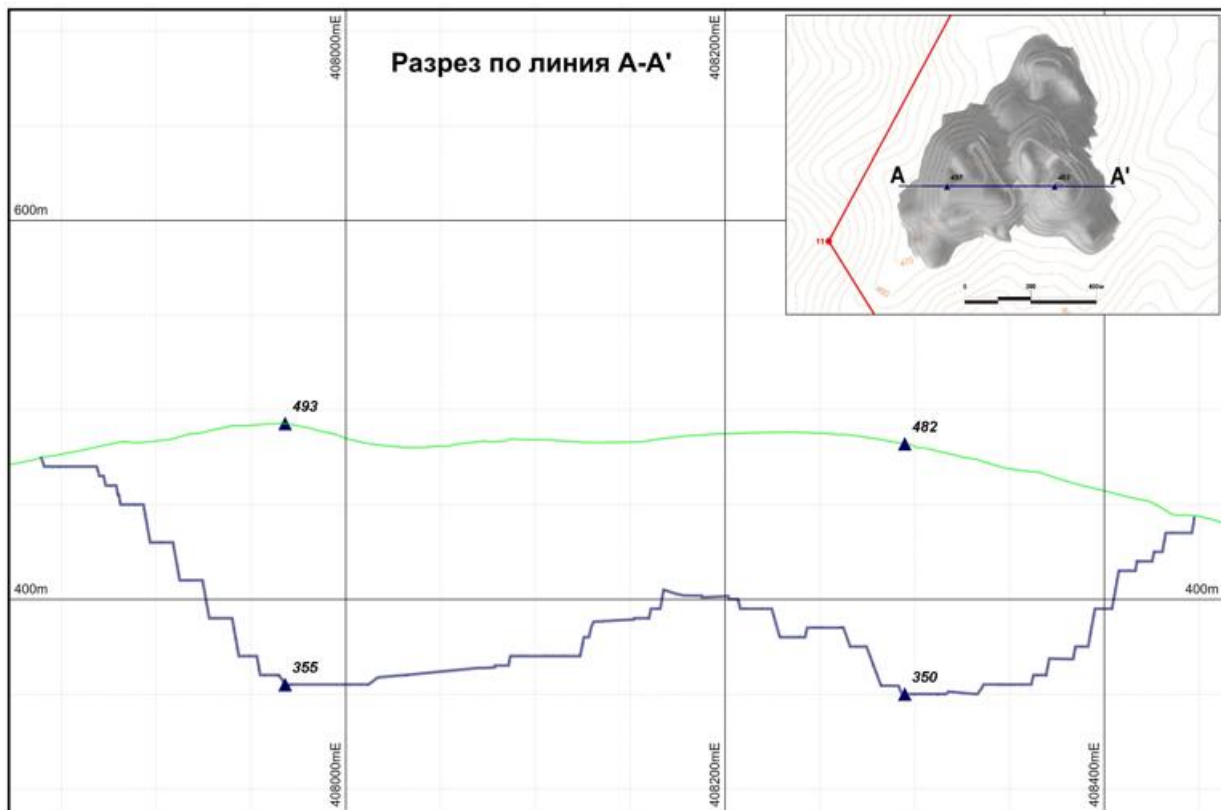


Figure I.1-3. Cross section of the pit with elevations

Deposit stripping and pit construction are fundamental for the open pit mining. The efficient and safe operation of the Tintyava PLA is contingent on the correct and coherent implementation of these activities.

The open pit mining of polymetal ores from the Tintyava PLA will include drilling and blasting, crushing, hauling and processing of the mined material in the processing plant, hauling of overburden (waste rock) to a stockpile, and transporting of the flotation waste to a MWF.

Mine Construction

The capital mine construction works will be as follows:

- **Year 1:**
 - Rehabilitation of existing road links and building of new roads to the pit, to the processing plant, to stockpiles, to the water reservoirs;

- Stripping works to prepare 2 stockpiles for topsoil collected selectively where possible and also stored selectively, a mine waste facility, and a temporary low-grade ore stockpile Approximately 45% of the project area will be stripped;
- Mine plant maintenance pad is set up;
- Construction of a power supply line is started;
- The plant site is cleared and construction of the processing plant is started;
- Mobile ISOBOX containers for the administration and changeroom facilities are delivered;
- A diesel generator set is delivered and installed for use during mine construction and, subsequently, as a stand-by power source for cases of main-supply failure;
- Delivery and installation of a mobile crusher for the MWF retaining walls (dams) and for road construction and maintenance;
- Grubbing of terrains intended for the clean water pond and starting the dam construction;
- Grubbing of terrains intended for the contact water pond and starting the dam construction;
- Grubbing of MWF footprint areas;
- Grubbing of the contact water reservoir dam area at the base of the MWF;
- Setting up of the first mine levels, mainly for overburden removal, in order to uncover and prepare ore reserves;
- Delivery of mobile chemical toilets for the workers.

➤ **Year 2:**

- Continued selective topsoil removal, with further 45% of the area,, or 90% in total being stripped, and continued selective topsoil disposal for subsequent use in rehabilitation;
- Continuing works on the MWF and the low-grade ore stockpile;
- All road links between individual facilities are completed;
- The MWF contact water reservoir dam is completed as are the pit and the processing plant will be completed;
- The low-grade ore stockpile contact water reservoir dam will be completed;
- The clean-water reservoir dam will be completed, as will be the contact-water pond and the non-contact water reservoir.
- The entire system for management of the water flowing to the contact-water and non-contact water reservoirs is completed;
- The adjoining infrastructure is completed and operations can begin;
- Construction of the processing facility will be completed by the end of Year 2.

Table I.2-1 shows the overburden and ore volumes utilized during the first two years.

Table I.2-1. Volumes utilized during the mine construction phase

Production year	One		Two	
Section 1	Overburden, t	Ore, t	Overburden, t	Ore, t
Total:	8,621	3,837	708,689	178,947
Stockpiled ore		3,837		178,947

Completion of all of the above activities completes the mine construction phase and initiates the proper mining.

Operation

Proper operations will begin immediately after mining construction is completed and after the plant begins normal operations.

The main processes during the operation will be:

- Overburden removal
- Mining operations
- Ore Processing

Ore mining

Topsoil overburden (mass) work

The topsoil (soil) overburden will be collected separately from the rock overburden. Selective topsoil stockpiling is envisaged and the topsoil will be used for disturbed-area rehabilitation after operations end.

The main soil-mass collection activities will be:

- removal from the envisaged areas of tree and brush vegetation (grubbing);
- heaping of the soil mass by bulldozer, although it should be noted that no topsoil is present in some areas or is shallower than 0.25 cm. and, therefore, cannot be collected. The topsoil from all other areas will be collected in heaps and loaded by front end loader or excavator onto trucks for hauling to the two top-soil stockpiles;

These stockpiles will be developed during the mine construction and will be closed after rehabilitation is completed.

Overburden (waste rock) work

The following overburden removal and ore-mining parameters have been set for the Rozino Deposit:

- Working bench height - 5 to 10 m.;
- Non-working bench height - 20 m. (the 5 m. high benches in the final non-mined contour are combined in groups of 4 or two 10 meter high benches joined as 2);
- Working bench angle - 85 to 90°;
- Non-working bench angle - 70°;
- Minimal width between two non-working bench groups - 12 m.;
- Minimal work-area width - 60 m.;
- Overall non-mined face angle 36÷48°.

Because of the hardness of the overburden, it is accepted that both the ore and the waste rock will be detached by drilling with subsequent millisecond delay initiation and blasting using the NONEL system.

As it does not contain any payable components but envelops or is hosted in the ore-bearing rocks, the rock overburden in the Rozino Deposit should be selectively removed and stockpiled.

Most generally, the processes for selective removal of waste rock are: drilling and millisecond delay blasting to detach the waste rock from the massif, loading by back-hoe shovel to trucks and hauling to a waste-rock stockpile.

Currently, the NONEL (non-electric) blast field ignition and blasting system has for the past 30 years been most widely used in Bulgaria and in the EU because of its advantages over electric or cap-and-fuse ignition which were used in the past in almost all open pits and quarries in Bulgaria. The NONEL system has the following advantages:

- It is the safest transport, handling and initiation system;
- Its broad range of arming delay devices allows for controlled reduction of the blast impact to a minimum level and blasting of separate series of boreholes in the same blast field;
- Lower sound impact.
- Better fragmentation.

Overall, 26.6 Mt or around 10.8 Mm³ of waste rock will be removed from the deposit by design. Or the expected maximum annual volume is 3.3 Mt (1.3 Mm³/a)

These volumes of waste rock are intended for stockpiling in the WRF to the east of the mine pit.

Backfilling of mined-out spaces will begin after Year 4 (once the reserves in Section 1 are exhausted).

The overburden removal bench heights will be 5 to 10 m.

The waste rock and the ore will be loaded by a 6 m³ backhoe hydraulic excavator, positioned after the blasting and airing of the pit next to the blast field and beginning the loading of the blasted heap.

Overburden hauling will be by dumper trucks with a total carrying capacity of approximately 55 t (33 m³) and a 10x4 axle configuration, a 7 m. loading length, a 2.6 m. loading width, and a 1.96 m. unloading height. The trucks will be equipped with modern engines meeting the EURO 6 emission standard.

Twelve machines will be used in overburden removal.

Table I.2-2. Overburden (topsoil and waste rock) work equipment types

No.	Equipment type	Required units
1.	Dozer	1
2.	Excavator	1
3.	Dumper trucks	7
4.	Water Truck	1
	Total overburden:	10

The conceptual design and a maximum annual output of overburden of 3.3 Mt and 1.7 Mt of ore underlie the tentative parameters for drilling and blasting for overburden and ore. The main drilling and blasting parameters are provided in Table I.2-3.

Table I.2-3. The main parameters of the ore blasting work

No.	Parameters	Unit	Overburden and ore - average parameters
1	Bench height	m	5 to 10
2	Hole Diameter	mm	76.2 to 110
3	Explosive type	-	ANFO/E3000
4	Relative explosive consumption	kg/m ³	0.36
5	Volume of rock blasted from 1 blast field / blasting for overburden	m ³	Approximately 30,000
6	Volume of rock blasted from 1 blast field / blasting for ore	m ³	Approximately 15,000
7	Frequency of blasting for overburden per week	qty	1 time per week
8	Frequency of blasting for ore per week	qty	1 time per week

The total number of blasts will be 88. The intent of the drilling and blasting works is to secure productive and efficiency of the excavation and hauling equipment and, also, of the primary crushing by suitable optimal crushing of the material and ensuring a minimal quantity of oversize pieces.

No explosives will be stored on site. The IP is not covered by the assumptions of Article 99b of the Environment Protection Act.

A contractor will carry out the drilling and blasting works and will deliver the required explosives immediately prior to their use, which excludes the likelihood of explosives being present on site. The determined mass of the charge will be mandatory for the drafting of each drilling and blasting pattern.

Ammonium nitrate - fuel oil (ANFO) and/or site-mixed emulsion are intended for use as the main explosives. The drilling and blasting parameters have been defined for three different

zones on account of the rock mass type and condition, as follows: Oxide, transitive and fresh rocks, for both ore and barren rock, respectively.

Special blasting works means that the blasted material will slide in place without any flyrock. However, as regards the safety of blasting near urban areas, any probability of flyrock will be precluded through the use of protective covers. These protective covers could be heavy rubber blasting mats or geotextile or light covers made of wide and smaller mesh nets used together with discarded post-use conveyor belts. Properly positioned over the blast field, the protective covers restrict flyrock. Blasting mats reduce the generated noise and dust raised during blasting. The individual protective covers will be positioned in a manner that enables blasting fumes to escape. This reduces blasting fume pressure and allows for a debris and dust suppression by the mats. Another substantial advantage is that the covers can be used multiple times.

In this regard and in line with the good open-pit development practices, the first 5 to 6 blasts will be intended to adjust and fine-tune the drilling and blasting parameters. Well-blasted/fragmented material saves further energy for fragmenting of oversize pieces and generally improves the efficiency of the mining and processing machinery.

In line with the Rules on Labour Safety in Open Pits and Quarries, the drilling and blasting contractor will hold a license for operation with explosives and must receive a permit from the Regional Labour Inspectorate for the performance of drilling and blasting for each year and must draft a drilling and blasting pattern for each individual blasting and present it for approval by the Control Over Hazardous Materials Authority of the Ministry of the Interior's regional office. The determined safe mass of the charge will be mandatory for the drafting of each drilling and blasting pattern.

The investor may not carry out any blasting inconsistent with the safe explosive charge determined with respect of the seismic impact in the area of the quarry. The legislator has provided for a strict control mechanism intended to ensure work safety, environmental safety and local community life and health safety.

Experimental blasts have been carried out during the pre-feasibility studies in the Rozino deposit, with control measurements and registration of their environmental impacts, their results are presented in 'Evaluation of the Side Impact of Blasting on the Environment, Rozino Site. Final Report (2020.)'

Ore related work

The following operational parameters have been adopted for both overburden and ore related work:

- Working bench height - 5 to 10 m.;
- Non-working bench height - 20 m. (the 5 m. high benches in the final non-mined contour are combined in groups of 4 or two 10 meter high benches joined as 2);
- Working bench angle - 85 to 90°;
- Non-working bench angle - 70°;
- Minimal width between two non-working bench groups - 12 m.;
- Minimal work-area width - 60 m.;
- Overall non-mined face angle 36÷48°.

Ore will be detached by drilling with subsequent millisecond delay initiation and blasting using the NONEL system.

The NONEL system has the following advantages:

- It is the safest transport, handling and initiation system;
- Its broad range of arming delay devices allows for controlled reduction of the blast impact to a minimum level and blasting of separate series of boreholes in the same blast field;
- Lower sound impact.

- Better fragmentation.

The following mining sequence will be applied:

- prepared reserves from a level will be percussion-bored by a rig equipped with a dust extraction system;
- once bored, the field will be charged with primed explosives and blasted.
- Once the working face is aired, the ore will be loaded by a 6 m³ backhoe excavator onto dumper trucks and will be hauled to the concentrator plant.

The expected maximum annual ore volume is 1.75 Mt, or 0.72 Mm³. In total, 6 machines will be employed in ore mining.

Table I.2-4. Type of ore equipment, pcs.

No.	Equipment type	Required units
1.	Excavator	1
2.	Dump trucks	4
3.	Water Truck	1
	Total Ore:	6

The blasting parameters are provided in **Table I.2-3**.

Securing the quality of ore feed to the plant requires work in two stages in the Rozino deposit. This will ensure availability of ore with the required quantity and quality over the entire period of operation.

Stage 1 Development of Section 1

All operation will be focused only in Section 1 during this stage.

Once stripping in Section 1 is completed, all the plant will be moved and used in the stripping and preparation of Section 2. Only mining will continue in Section 1 until the scheduled geological reserves are exhausted.

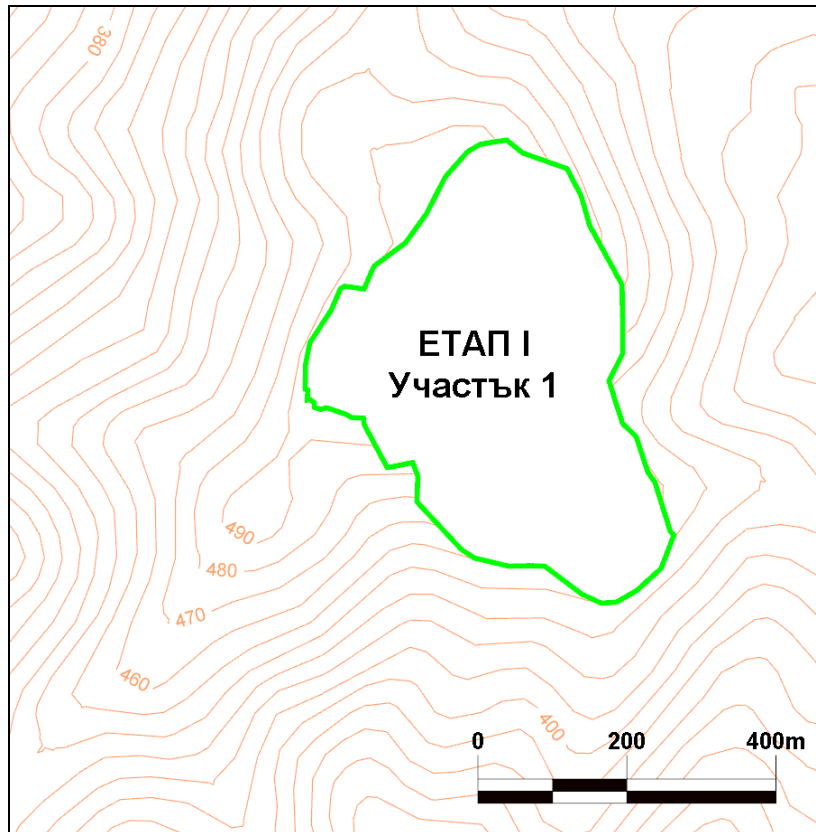


Figure I.2-3. Stage 1, Section 1 of the deposit

Once the bottom of reserves in Section 1 is reached, waste overburden and mine waste rock can be used as backfill in the pit in this section (the mine waste facility will change from external to internal).

Stage 2: Section 1+2

Stage 2 will begin by pre-stripping in Section 2. Mining in Section 1 will not yet have been completed.

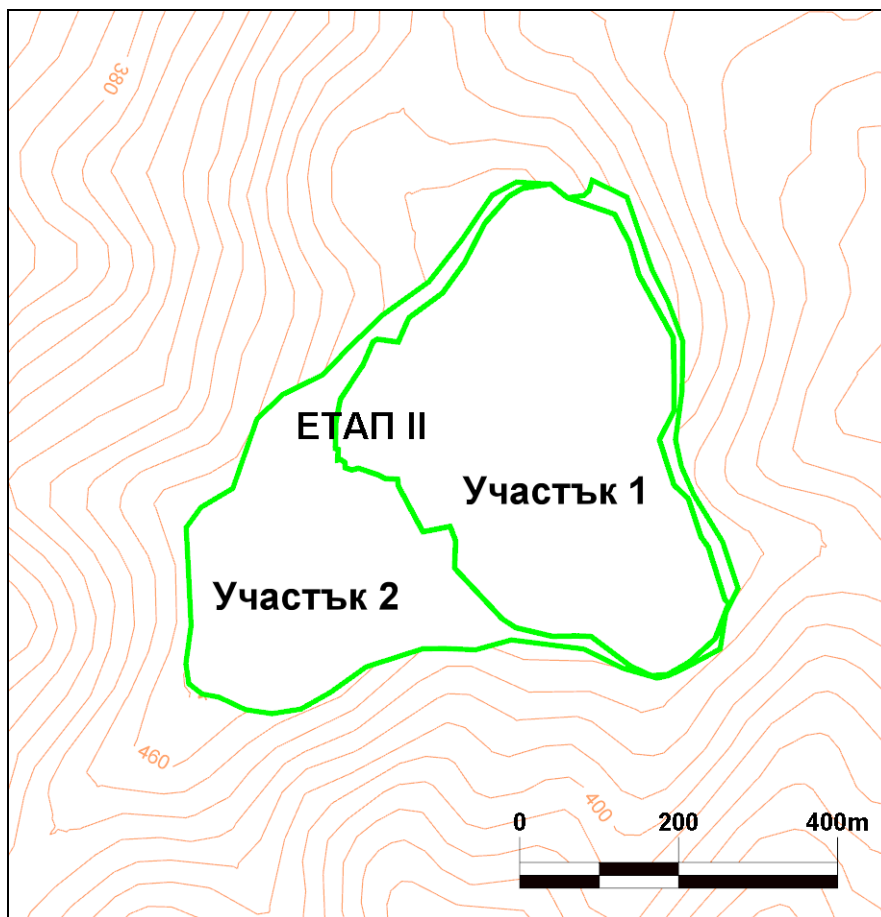


Figure I.1-4. Stage 2, Section 1 and Section 2 of the deposit

Section 2 will be completed after:

- full exhaustion of reserves in Section 2;
- backfilling of Section 1 using overburden rock and processing waste.

Stockpiling works

Stockpiling will involve selective stacking by bulldozer and trucking.

Selective/separate stockpiling of:

- Earthfill and topsoil;
- Waste rock (overburden);
- Flotation tailings (processing waste)

This selective stockpiling conforms to the best international practices for management and conservation of topsoil which will be used to remediate disturbed areas at the beginning of the rehabilitation phase.

Stockpiling of topsoil

Two earth-fill and topsoil stockpiles will be developed for the deposit, as follows:

- To the north-east with one horizon at RL 495 m;
- To the south-west with two horizons at RL 377 and 382 m.

These stockpiles are expected to evolve during the mine construction and will be closed after rehabilitation is completed. It should be noted that the a staged rehabilitation system can be selected during the drafting of the overall design for operation and closure of disturbed lands.

Stockpiling of waste rock (overburden)

As regards the rock overburden stockpile, it will be bulldozer operated. The waste rock hauled by trucks will be delivered to the stockpile and dumped. Subsequently, a bulldozer will shape the stockpile.

An external stockpile will be developed and in-pit stacking will begin after Year 4.

The boundary between the outer and the in-pit stockpiles is conditional and follows the outline of Section 1 in the pit.

Table I.2-5. Type of stockpiling equipment, pcs.

No.	Equipment type	Required units
1.	Dozer	2
	Total stockpiling works	2

Disposal of flotation tailings

The processing waste will be disposed of in a thickened state of 70 – 75% solids. This method is preferable to the conventional tailings for the following reasons:

- Higher recovery of return water;
- Lower use of ‘fresh’ water;
- Smaller disposal area;
- Significant increase in the stability coefficient of disposal facilities containing thickened flotation tailings;
- Significantly reduced risk of compromising of supporting facilities;
- Significantly higher potential for staged rehabilitation.

Disposing of flotation tailings (processing waste) with a 25%/75% water to solids ratio will reduce the footprint and, thus, the volume of the facility by approximately 1÷1.5 ha as compared to conventional disposal where the water to solids ratio is 45%/55%, i.e. there is an approximate 20 to 25% reduction of return water.

The water content of the flotation tailings will be reduced and a thickener will be installed in the processing plant to store the water from the dewatered flotation tailings.

Following exhaustion of the reserves in Section 1 and as the mining works in Section 2 advance, backfilling of the mined out spaces will begin and, again, will be consistent with the best open mining practices. Backfilling is expected to begin during Year 4 or 5 of the operations.

Backfilling has the following positive effects:

- Substantial reduction of the area required to (store overburden) and processing tailings (should the quality of such a process be proven);
- Substantial reduction of the time during which external stacking will be required, allowing for much faster rehabilitation of the possible external stockpile and the external process tailings storage facility.

Ore Processing

Process Flow Diagram and Description of the Ore Processing Plant

According to the pre-feasibility studies, the mined-ore processing sequence includes the following main and auxiliary activities:

- crushing and hauling;
- Storage of crushed ore in a covered intermediate storage facility - a reinforced concrete area covered by a canopy and with a feeder underneath;
- milling (ball mill);
- flotation;
- flotation tailings thickening and disposal in a WRF;
- concentrate thickening and filter-press dewatering;
- auxiliary activities - provision of: water, air and reagents.

The general concentrator-plant process flow diagram is presented on Figure 1.2-5.

Ore Dressing

Crushing

The choice of ore preparation circuit is underpinned by the low fragmentation index (4,7-8,92 kWh/t) and the moderate Bond-mill work index (11,2-12,5 kWh / t) for the different ore types which favours the use of a staged crushing circuit and ball milling. A belt feeder is the primary feeding device and is capable of sustaining impact by large pieces of ore entering the ROM bin. A static grizzly will separate all oversize pieces from the jaw-crusher feeder. Secondary dust from unloading trucks and from the crushing process will be prevented by a sprinkler system installed throughout this plant.

The comminution circuit is designed to produce P80 -12 mm. crushed ore. It will involve three stages of crushing: Primary jaw crusher followed by secondary and tertiary cone crushers. The ore will be fed directly from the pit or by a loader from the ROM pad to the ROM bin. A protective 700 x 700 mm screen will prevent entry of large pieces into the jaw crusher. A static 15kW hydraulic hammer will crush oversize pieces to the required size. A belt feeder (1300 x 6400 mm, 22kW) will feed the primary jaw crusher (160 kW). The crushed ore will be fed to a conveyor through a sieve. Any steel scrap will be removed by a magnet in the metal scrap bin.

Air quality in each crusher building will be maintained by a system of sprinklers. A 5 t maintenance hoist is provided for in the primary crusher building. The primary crushed material will be screened in a two-deck screen. The underside will report to the stockpiled ground ore and the oversize will report to the secondary and tertiary cone crushers. The secondary and tertiary crushers will operate in a closed circuit with the two-deck screen until all material is fed as through the lower screen deck to the stockpiled crushed ore. Two weightometers are provided for. There is one secondary crusher and two tertiary crushers. Assuming 16 hour work in two shifts with a 75% plant availability on average, the crushing plant throughput will be 5,000 t/day. The total installed capacity of the crushing plant will be approximately 1,600 kW.

Covered crushed-ore intermediate storage

A 15,000 t. of buffer volume is provided for downstream of the crusher. This volume will be sufficient to supply the milling circuit for three days.

The crushed ore will be kept in a temporary stockpile comprising a reinforced concrete pad with a feeding bin and will be covered by a metal canopy to prevent fugitive emissions of dust.

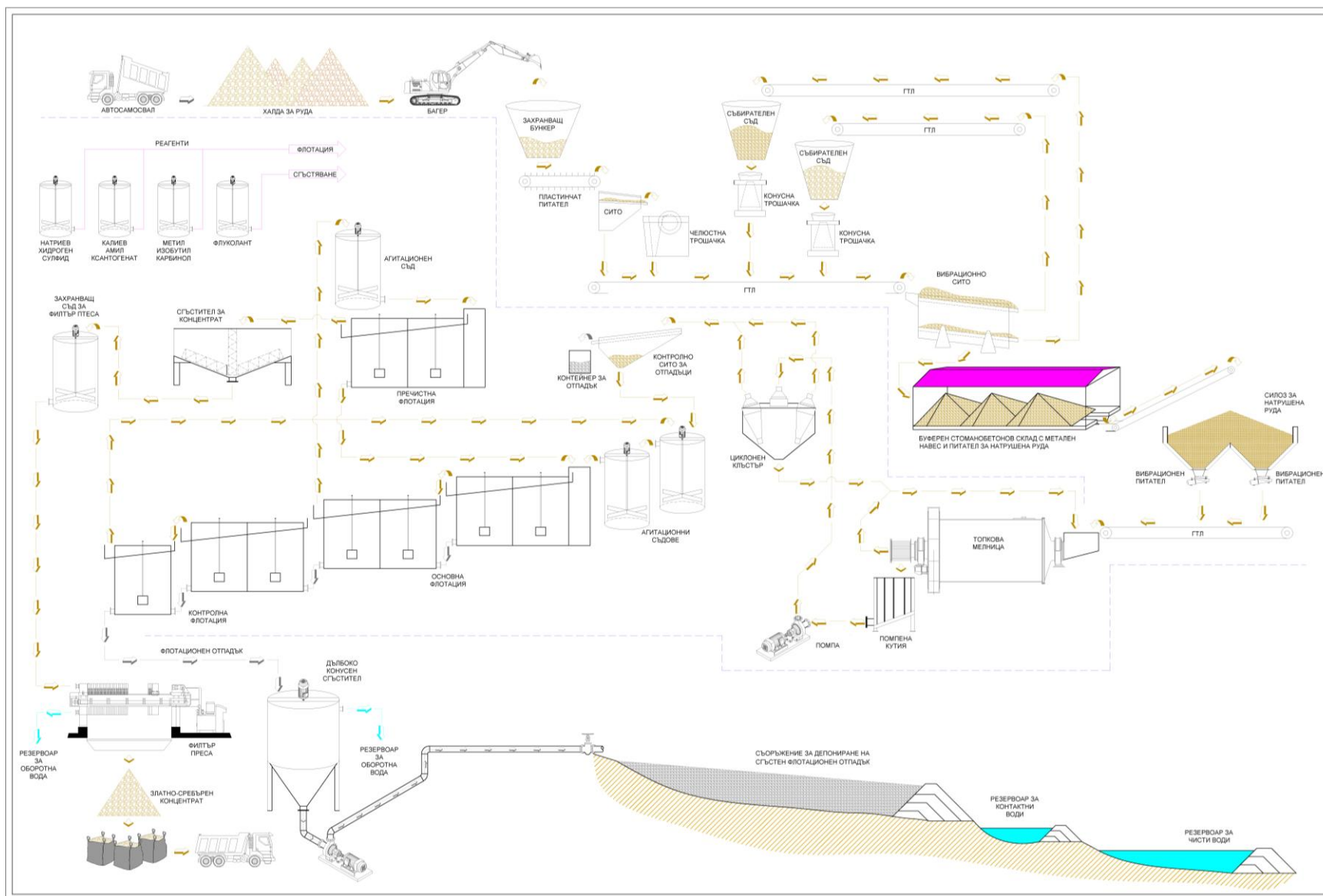


Figure. I.2-5. Processing Plant Flow Diagram

Ore grinding.

The ore will be ground in a ball mill. The mill feeding belt will be provided with the necessary ore-feed speed controls and capacity counters. A crosscut conveyor belt sampler will be provided for metallurgical accounting purposes.

The milling circuit comprises a ball mill operating in a closed cycle with a battery of cyclone classifiers. This milling circuit is designed to produce particles P80 -75 μm . The ball mill is 4.88 m in diameter, 7.62 m long with a 3500 kW motor. The ball mill comprises a trunnion and gearbox lubrication system, a cooling system and a control system. The ball mill discharges into a sump feeding the hydrocyclone battery by means of a duty/stand-by feeding pump. The cyclone battery comprises 14 cyclones of which 12 only are operational at any time. The cyclone underflow reports to the flotation circuit while the sand recirculates back to the ball mill.

Any spillage from the grinding circuit will be contained within a sump beneath the ball mill. The sump will be equipped with a vertical slime pump to direct spillage back into the mill feed box.

The installed capacity in the milling circuit is approximately 3,700 kW.

Ore dressing (flotation)

High-volume flotation cells were chosen for the flotation circuit as they are more cost-effective than staged flotation reactors (SFR) from the CAPEX and OPEX perspective. The cells were sized and selected based on resulting laboratory flotation times, with a 2.5 industrial-scale ratio and an aeration ratio of 0.85.

The flotation circuit will comprise a standard collective rougher-scavenger and cleaner sections to produce gold-pyrite containing concentrate.

Prior to reporting to the flotation circuit, the ground ore from the hydrocyclone battery underflow will be passed through a 0,85 mm. mesh size cleaning vibrating screen for removing of all non-typical impurities in the ore, such as wood, plastics, metals and larger ore pebbles.

The cleaning screen underflow will be fed to the two agitation cells, each of 50 m³ in volume. Sequentially connected, they will provide the required slurry and reagent agitation time of 2 x 5 minutes.

A feeding pump downstream of the agitation circuit will feed the slurry to the rougher-scavenger cell circuit comprising 6 high-volume flotation cells in a configuration of 4 gold bearing rougher cells and 2 scavenger cells. Each cell has an effective volume of 60 m³, the total being 360 m³, which ensures the required flotation time of 34 minutes. All flotation cells electrical motors are 90kW each.

The flotation cells are supplied with air mass flow control to enable each bank of cells to be controlled.

The scavenger product is the final flotation barren waste and will report to the deep cone thickener for dewatering prior to reporting to the WRF.

The rougher concentrate will be pumped to the cleaner bank. Before reporting to the flotation cells, the slurry will be conditioned in a 10 m³ agitation cell allowing for a 5 minute-long slurry agitation with reagents. The cleaner circuit comprises two cells with installed capacity of 15kW and effective volume of 8 m³ each, or 16 m³ in total, ensuring the required 8.6 minutes of flotation time.

Water sprays are provided in the flotation cell launders to assist froth breakdown and concentrate flow.

A sampler on the discharge side of the scavenger tailings (final tailings) provides a current analysis sample.

The cleaner concentrate is final and reports to a sump feeding a gold bearing concentrate sump. The target gold concentration in the final concentrate is 22 to 30 g/t depending on the

grades in the ore feed.

The gold bearing concentrate pump is a fixed-speed cellular pump.

Reagent metering is controlled automatically to operator-set flow rates. Dedicated pumps and metering devices feed frother (Methyl Isobutyl Carbinol - MIBC) and collector (Potassium Amyl Xanthate - PAX) in various points along the flotation process.

Any spill along the circuit is collected by sump pumps mounted on the flotation circuit floor and is fed to the respective points along the flotation circuit.

The installed capacity in the flotation circuit is approximately 1000 kW.

Concentrate thickening and filtration.

The concentrate thickener has been sized using the available static-settling test results. No dewatering tests have been carried out to size and select the concentrate filter unit. Data about similar concentrate types and particle sizes were used instead. The design moisture content in the concentrate is 10 to 12% density by volume. The concentrate thickening and dewatering circuit comprises a 16 m. diameter concentrate thickener and a dewatering filter press. 11.3 t/h of concentrate will report to the thickener, with 23% solids in the feed. The thickener overflow will be recirculated back to the process water reservoir for reuse in the grinding and flotation circuits. Two 50 mm by 40 mm duty/stand-by thickened tailings pumps will pump the thickened product (50 to 55% solids) to the filter press.

The filter feed reservoir will be agitated to prevent settling of solid particles. Two 75 mm by 50 mm duty/stand-by thickened tailings pumps will pump the concentrate from the filter-press feed reservoir to the concentrate filter-press. The concentrate filter press will be a vertical filter-plate press designed to operate at 75% availability and to produce 11.3 t. of concentrate per day with 10 to 12% moisture content. The filter-press is equipped with a dedicated compressor and air intake.

The concentrate will report to a bin for storage before being loaded for processing by an end-user.

Required plant

The following will be required for the concentrator plant:

- A front-end loader to feed the crusher plant;
- A bulldozer to maintain the crushed ore buffer storage;

Table I.1-6. Type and numbers of the machines used in the Processing Plant

No.	Equipment type	Required units
1.	Front end loader	1
2.	Dozer	1
Total for processing plant:		2

Flotation Tailings Management

The following specifics were considered for the choice of the tailings thickening and dewatering process:

- Physical and chemical parameters of the flotation tailings will - the current data show no acid generation potential.
- The yield strength limit or yield stress - the property corresponding to the yield strength limit at which plastic deformation of the material occurs;
- Negative water balance;
- Best practices for dewatering of processed mining waste;

- Best practices for management of mining and processing waste.

The above practices and the basic design for the Rozino Deposit have led to the selection of a technology for disposal of flotation tailings (processing waste) thickened to 70-75%.

Tailings disposal will be preceded by removal of water (thickening). The thickener operates in the following manner: radial flow of slurry to the centre of the thickener, into a feeding tank. As the solids settle, a rake reaching the outer end of the thickener rotates slowly and moves the settled material to the central outlet. At the same time, as solid particles deposit over the thickener base, the supernatant water or solution clarifies and as its level increases with the introduction of more slurry, it flows over a perimeter launder to return to the process. The particles settling into the centre of the thickener and the matter raked toward it exit through the central exit pipe at the thickener base, containing significantly less water than the slurry in which they had entered the thickener. High-pressure slurry pumps can transfer the thickened processing waste to the storage facility.

The advantage of this method is its efficiency as regards water and the more favourable operating conditions as compared to the conventional method of disposal of processing waste with high content of water. A second advantage over the other options is the minimal potential for liquefaction (slumping or flowing) of the disposed waste or a dam failure. Usually, high-output cone thickeners increase the solids concentration to around 70 -75%.

Cone thickeners ensure the highest yield strength values and guarantee high stability of the stored waste.

The water to solids ratio in the resulting waste is 25/75.

Higher thickening allows for:

- significant increase of the use of return water;
- significant reduction of the use of 'fresh' water.

Being denser, the waste is easier to handle and shape the stockpile it is disposed of in.

Reduced water content shortens significantly the time for evaporation of residual water and improves the stability of the stockpile body, thus allowing for its staged upgrading with guaranteed stability.

Thickening of waste prior to disposal bears a reflection on the overall consumption of water in the processing plant and provides a substantial improvement of the overall water balance.

Also, thickened waste disposal conforms to the natural geographic, geological, geotechnical and geochemical conditions of the site. As the waste is disposed of from the highest toward the lowest stockpile points, it should be noted this disposal enables staged rehabilitation of completed slopes.

Closure and rehabilitation

If the maximum output is achieved - mining and processing of 1.7 Mt of ore per year, closing and rehabilitation of worked out spaces may begin as early as Year 6 after mining begins.

Post-closure rehabilitation (technical and biological) will ensure a stable and maintenance-free status of the site. The proposed overall site-rehabilitation strategy is:

- Technical rehabilitation;
- Biological rehabilitation.

In practice, technical rehabilitation will start during mine construction, when topsoil will be collected and stockpiled selectively.

The technical rehabilitation activities will involve:

- Forming of ledges and securing of all non-working benches;
- Cleaning of all mine levels of residual rock pieces;

- Loading, delivery and spreading of topsoil along the terrains intended for rehabilitation;
- Preparing of terrains intended for forestation;
- Preparing of terrains intended for recovery for agriculture;
- Ensuring normal surface run-off;
- All areas remediated during the Concentrator Plant closure will be ploughed up (to increase water infiltration and reduce the potential for surface erosion and instability), levelled and covered by a 0.15 m deep top-soil layer (except for the concrete structures).
- The concrete slabs will remain in place and will be covered by approximately 0.40 m. deep layer of topsoil from the stockpiles.

The technical rehabilitation will be followed by biological one. It will comprise:

- Forestation of the areas intended for returning to the forestry fund by creation of a nursery of saplings of local tree species (oak and Austrian pine) which will be required for rehabilitation;
- Sowing of grass in the areas intended for restoration as agricultural land, by purchasing of seed mixes, sowing and growing.

Chemical Composition of the Ores

The following were observed in the analysed ore samples:

- Primary materials: pyrite, chalcopyrite, sphalerite, magnetite.
- veined materials: quartz, calcite
- supergenetic materials: haematite/limonite, bornite.

Pyrite is the most frequent primary mineral. The remaining minerals occur as single grains. Pyrite precipitates as idiomorphic and hypidiomorphic grains and aggregates most common separately, rarely with chalcopyrite and sphalerite. Most frequently, the supergenetic minerals affect pyrite which is completely replaced by haematite/limonite in certain places.

No native gold has been found in the ore.

The only vein minerals observed are only quartz and calcite.

Haematite is the most widespread supergenetic mineral, attended by limonite in many places. Several bornite grains have been identified and may be the result of chalcopyrite alteration.

Site electrical power usage

Electrical power - Powering the concentrator plant and open pit machines, facilities and installations requires construction of a power line. At this stage, the design scheme involves construction of one branch line from the existing 10 kV power line (designated by a black line in the figure below) and comprises a switch yard in the Rozino Village. The route (designated by a red line in the figure below) to the Processing Plant is expected to be 2.4 km long. The switch yard is 583 m. away from the concession boundary.

The power line coordinates in the BGS-2005 system are:

Site	East	North
Rozino switchyard	408680.31	4589732.34
Intermediate point	408691.70	4589375.40
Point of entry into the concession area	408764.60	4589160.97

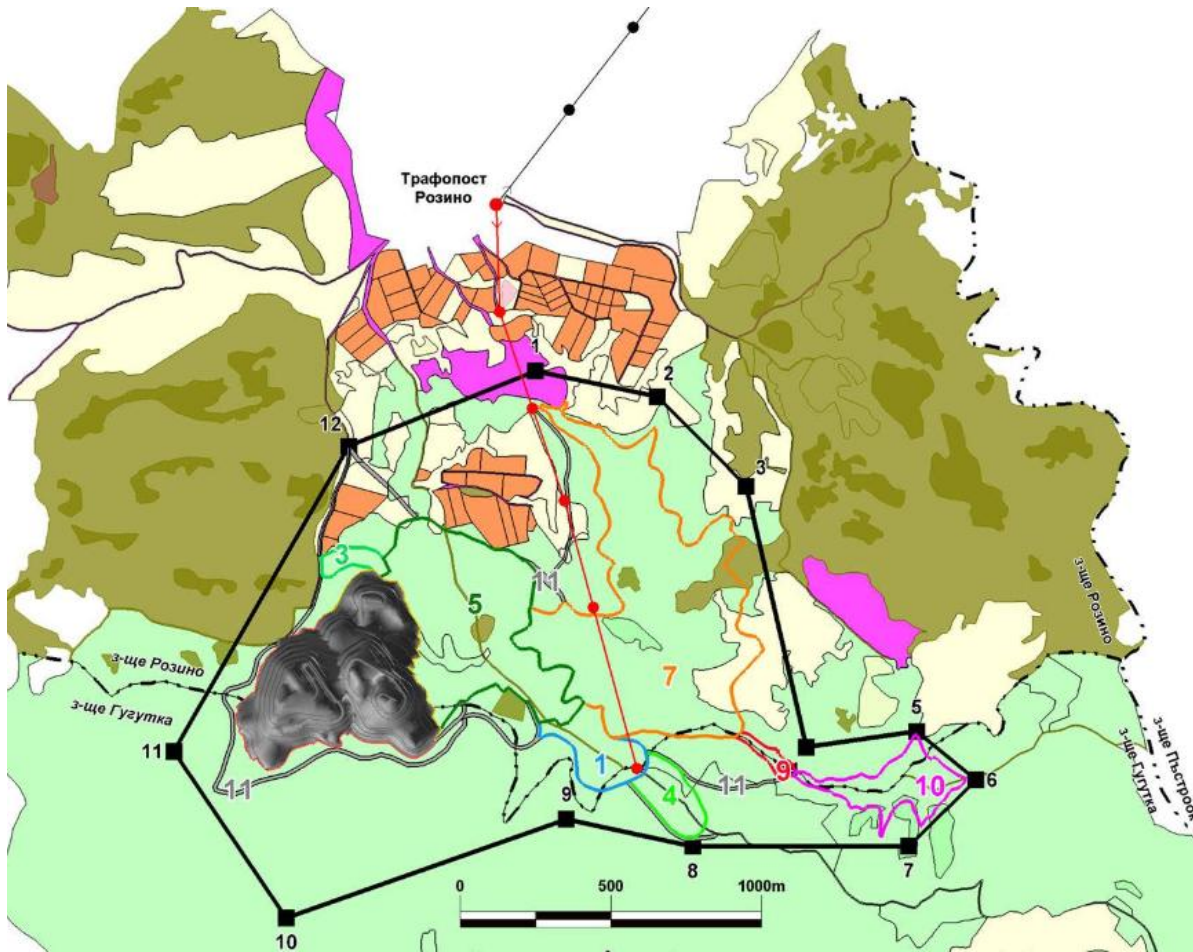


Figure I.2-6. Projected power-supply line route.

Site water supply

The IP will require processing water (for the processing plant and for dust control, and potable water for the personnel.

The hydrology report on the hydrology study of existing surface water bodies **shows that** water can be used from Arpa valley between January and May, when its river flow is sufficient, to supply via the Rozino Pumping Station a water flow of at least 50 l/s (for an expected overall volume of 648,000 m³) which is equal to 10% of the average-multiannual water quantity, **and to guarantee the ecological minimum for the river.** An open non-contact water reservoir will be filled during this period by constant pumping.

One possible water-abstraction option is to build a pumping station near the existing Rosino Pumping Station used for supplying of potable water to the village of Rozino. The higher water flow in February, March and April allows for using higher flow rates, at around 100 l/s during these months, to fill the non-contact water during higher precipitation-related inflows.

As the pit develops during the years, the Rozino mine watershed area will accumulate precipitation water. This water will report to an open contact-water reservoir and will be used in the process.

The hydrogeological study in the deposit area showed insignificant groundwater flow-rates and that groundwater abstraction would be utterly insufficient for the process.

Where possible, the water will be returned to ensure optimal water consumption, and an open contact-water basin will be constructed for this purpose.

Bottled water will be provided for drinking purposes. Water from the non-contact reservoir will be used for household purposes (for the toilet facilities).

II. Description of the characteristics of other plans, programs and projects/investment proposals, existing and/or being developed or approved, and which may, when combined with the assessment of the IP, have unfavourable impacts on the protected areas.

According to the Regulation on CA, ‘Cumulative impacts’ are impacts on the environment caused by increased effect of the assessed plan, program and project/investment proposal when the effects of former, present and/or expected such plans, programs and project/investment proposals are added, irrespective of whom they are implemented by. The cumulative impacts may result from individual plans, programs and projects/investment proposals of insubstantial effect when considered independently, but their effect may be substantial when considered jointly and implemented multiple times during **a certain period of time**.

The possible impacts by IP on protected areas (for a detailed analysis of the potential IP impacts, see item III) are:

1. **Direct destroy natural habitats and habitats of species**, that are subject to protection in the site.
2. **Fragmentation of natural habitats** that are subject of protection in the PA.
3. **Fragmentation of habitats of species** that are subject of protection in the PA.
4. **Barrier effect** on species that are subject of protection in the PA.
5. **Disturbance** of individuals of animal species by *moving and operating construction, mining and transport equipment and people, and by drilling and blasting*.
6. **Mortality** of individuals of animal species during *movement and operation of transport and construction equipment*.
7. **Destruction of individual** plant species which are the subject of protection in the PAs. This factor will appear only if the above impacts occur in the concession area.
8. **Damage to habitats of species** demanding aquatic environment.

Therefore, a cumulative effect could arise from such investment proposals/plans, programs and projects which **had, have or will have** the same effects on natural habitats of species which are subject to protection in the protected areas under consideration, which will be affected by this investment proposal.

Disturbance and barrier effects could create a cumulative impact only if other investment proposals/plans, programs and projects having the respective impact type are immediately close to this IP and are being implemented/operated at the same time. In this case no cumulative effect could occur because of the remoteness of the other investment proposals/plans, programs and projects and/or their implementation during other time periods. As regards mortality, a cumulative effect could arise only if another IP suggests high mortality of species identified as being at risk during the implementation of this IP. Application of the mitigation measures (see V.1 below) will ensure that this IP will not cause any significant impacts. No significant mortality is implied by the other investment projects/plans, programs and projects. Therefore, a cumulative impact could exist only with respect of the direct destruction of natural habitats and habitats of species which are subject to protection in the Protected Zone, and related fragmentation.

According to written information from the MOEW and the Haskovo RIEW, and according to information on their web pages, 452 investment proposals/programs, plans and

projects have been processed so far for the Rhodopes-Eastern Protected Zone and 33 for the Byala Reka Protected Zone, that have the potential to impact the zone (Attachment II-1). Duplicated investment proposals, plans, programs or projects (where two or more procedures have been carried out in respect of the same property or properties, the assessment compared the IP parameters from the last procedure to the status of the area before the first procedure); IPs and plans, programs or projects concerning areas external to the protected zones in question, and those with terminated procedures or those waiting for more than 5 years, were excluded from the assessment. A cumulative impact cannot be expected from forest management projects or their amendment, because in principle they do not change the nature of the habitats (consistent with the relevant decisions). No cumulative impact could arise also by IPs in urban environment, for repair/rehabilitation of existing facilities, and by other IPs which cannot create direct impacts on natural habitats and/or species which are subject to protection in the Protected Zone, or disturbance of the animal species. Such IPs are, for example, drip irrigation projects for existing agricultural crops. Certain programs of strategic nature were not taken into consideration, because they do not provide for specific IPs and could not have effect on natural habitats or species which are subject to protection in the Protected Zone.

The possible impacts or their absence are described in Attachment II-1. In total, 82 investment projects/programs, plans and projects have the potential for cumulative impact on the Rhodopes-Easter Protected Zone together with this IP, and 5 such plans and projects can have cumulative effect on the Byala Reka Protected Zone.

Item V.2 presents assessments of specific cumulative impacts for each zone.

III. Description of the IP elements which could, independently or in combination with other plans, programs and projects/investment proposals, have a substantial impact on the protected area and on its elements.

The potential impacts that the realization of this IP could have in the protected area, are:

1. Direct destruction of natural habitats and habitats of species that are subject to protection in the IP elements. The entire area of individual IP elements plus small areas closed between them, or between individual elements and their access roads (Figure III.1-1) is regarded as affected. Therefore, the directly affected surface area is 146.58 ha.

2. Damaging of natural habitats and habitats of species that are subject to protection in the site caused by pollution during mining and drilling and blasting (incl. *seismic impacts, blast waves, debris, dust and NOx*). Based on our experience from other IPs, no excessive levels of dust and NOx are expected outside the directly affected area. Taken alone, the seismic impact, blast wave or debris cannot cause lasting damage to vegetation or, respectively, to natural habitats and to habitats of species including those which are subject to protection in the PA. This is supported by our field observations of the operation of other similar IPs where natural habitats protected in Pas were established in immediate proximity to the elements of such IPs. Habitats of species associated with aquatic environment may be affected by increased turbidity in the water during the mine construction phase.

3. Fragmentation of natural habitats which are subject to protection in this zone - if an area (polygon) occupied by a habitat is affected in a way such that its remaining part(s) are of area insufficient to preserve the characteristics of the affected natural habitats or if these characteristics are impacted negatively. Deterioration or even loss of such characteristics is caused by the so-called “edge effect” whereby abiotic (sun shine, air humidity, soil moisture etc.) and/or biotic (species composition of tree, brush or grass stands) environmental factors are changed (Andren 1994, Bennett & Saunders 2010, Didham 2010, Fahrig 2003, Franklin et al. 2002). With this in mind, much of the areas that could be subject to fragmentation (small areas

remaining closed between the IP elements and their access roads) are considered as directly affected (see above, (Figure III.1-1).

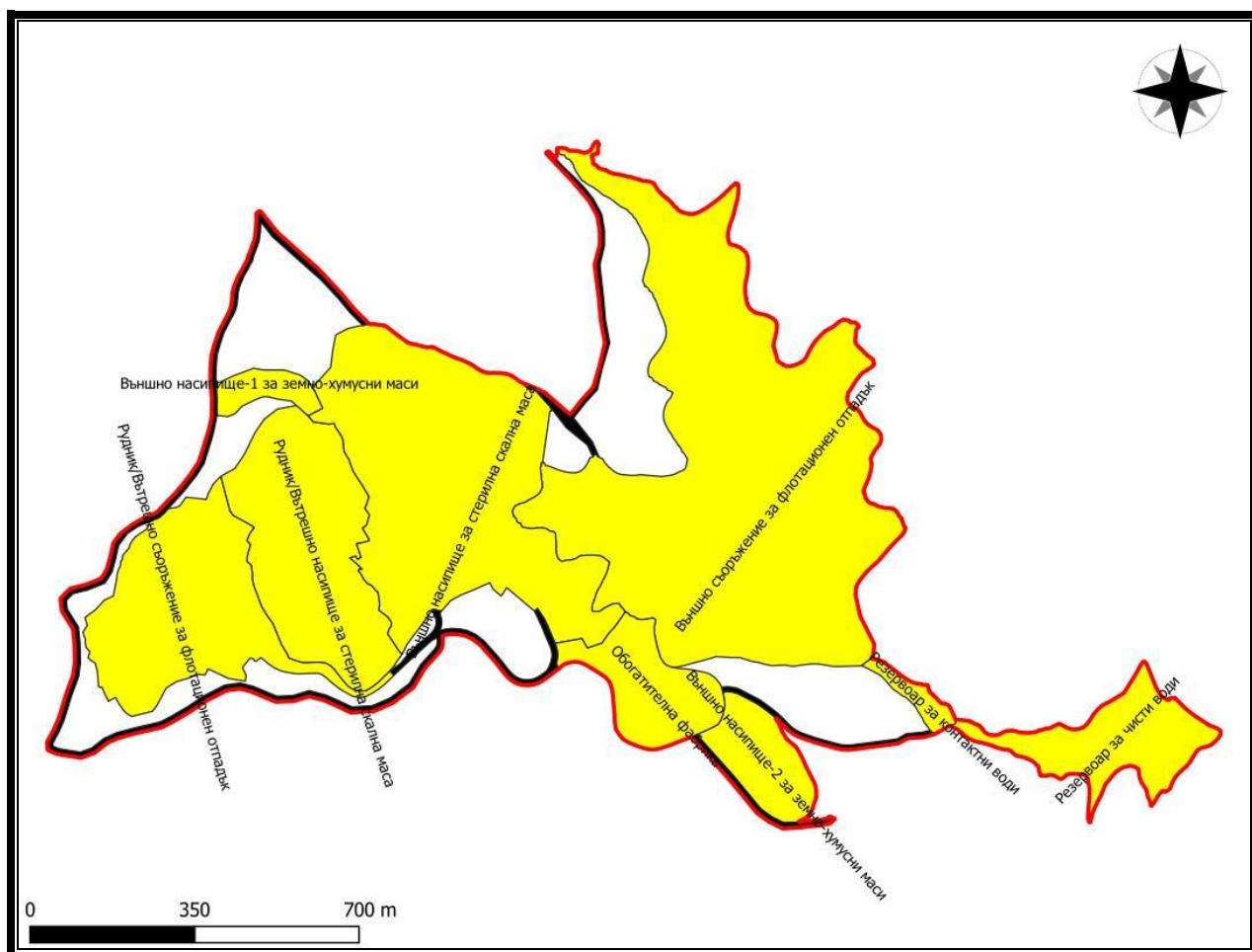


Figure III.1-1: Area considered to be directly affected (red outline) by the IP implementation. Yellow polygons – IP elements; black lines – roads for access to these elements.

4. Fragmentation of habitats of species which are subject to protection in this zone - if an area (polygon) occupied by a species habitat is affected in a way such that its remaining part(s) are of area insufficient to preserve the characteristics of the affected habitat of this particular species. To be used by a species, many species require polygons of certain species-specific size in which potential habitats are present.

5. Barrier effect on species that are subject of protection in the PA, resulting from mine development, separation of polygons with habitats of species or bio-corridors, so that individuals of such species are deprived of free access to individual parts of the polygon or the zone. The barrier effect may be caused by inability of individuals of a species to overcome the IP elements or 'reluctance' to do so because of disturbance. This results in impossible or difficult migration (in a broader sense this could be diurnal migration for feeding, or seasonal migration related to various abiotic factors or breeding, or resettlement), and/or fragmentation of the populations of affected species. No barrier effect for birds and bats is implied by the IP, given its low elevation and the high mobility of these groups of species.

6. Disturbance of individuals of animal species by *moving and operating construction, mining and transport equipment and people*, and by *drilling and blasting*. Not many studies of noise impact on biodiversity have been carried out. There are even fewer accessible studies of

this type. For example, Hirvonen (2001) measures equivalent noise level of 56 dBA above which significant impacts on waterfowl nesting around newly-built motorway are established. Based on available literature, Archer (2014) predicts significant impacts by pulsed noise on biodiversity leading to abandonment of territories at maximum noise levels above 80 dBA. Shannon et al. (2015) review the existing literature covering this subject (68 publications concerning terrestrial fauna). The author use this as the basis to calculate a median equivalent noise level value of 60 dBA as the limit value above which noise-caused impacts on the terrestrial fauna are observed, as is supported by a solid number of published literature.

This impact may cause abandonment of habitats in the area of disturbance, reduced nesting success and/or abandonment of nests with eggs and/or chicks in the case of some more sensitive species (some mammals, birds). The effects of disturbance are species specific. The maximum extent of such impact by noise from the IP elements during normal operation is 110 m. The expected equivalent values at this distance are around 55 dBA. Disturbance during blasting operations may be caused by the seismic effects, the blast wave and debris, and, also, by pulsed noise. An equivalent noise level of 54 dBA was measured in the GUSV quarry (Studena deposit), at a distance of around 650 m. from the blasting field (61 blast holes) (EIA Statement for the IP for Mining of Construction Materials – Dolomites, from the Studena Deposit, Zavodski Stroezi 2 Section, in the lands of the Studena village and the Krapets village, Pernik Municipality). Experimental blasting for the present IP showed maximum average levels of 64 dBA measured at a distance of 800 m. This leads to the conclusion that the drilling and blasting operations will not cause significant disturbance at more than 700 m. from the mine boundaries.

7. Mortality of individuals of animal species during *movement and operation of transport and construction equipment*. This impact will be observed during the mine construction phase because this is when individual animal species are likely to be present within the IP elements. Individuals of small, slow-moving species or slow-moving young of all species residing in the area of the construction works may be affected. Such an impact is not expected or will be insubstantial during the operation phase when the IP will be unsuitable for inhabitation by these species.

Bird mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely.

8. Destruction of individual plant species which are the subject of protection in the PAs. This factor will be appear only if the above impacts occur in the directly affected area.

9. Influx of non-native and/or invasive plant species used during *the biological rehabilitation*. No impacts are expected with the use of species typical of the region and, therefore, will not be evaluated separately.

IV. Description of the Protected Areas

The IP area lies within two protected areas (PA) of the Natura 2000 network - Rhodopes – East, with code BG0001032, designated for protection of natural habitats and of wild flora and fauna, and Byala Reka with code BG0002019 designated for protection of wild birds.

IV.1. Rhodopes - Eastern Protected Area, BG0001032

This area was designated pursuant to Directive 92/43/EEC on the Conservation of Natural Habitats and the Wild Flora and Fauna. Its surface area is 217446.9973 ha.

Characteristic:

The protected area covers the larger part of the East Rhodopes. The Gorata ridge (704 m a.s.l.) is situated in the north-eastern part. – densely overgrown by oak forests. The Arda River

and the lower stretch of the Krumovitsa River with their interesting rocky and grass habitats are situated to the south. The valleys of the Byala and the Luda Reka rivers, which are among the wildest rivers in Bulgaria, flow through the south-eastern part of the area, and the higher ridges - Gyumyurdjinski snezhnik and Maglenik (1,463 and, respectively, 1.266 m a.s.l.) tower along the Greek border.

Many old oak and beech forests are preserved on these ridges.

Subject of Protection

Natural habitats:

Code	Habitat Type	Coverage/ha
3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> species	0.021
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation	272.509
5130	<i>Juniperus communis</i> formations on heaths or calcareous grass lands	361.360
5210	Arborescent matorral with <i>Juniperus</i> spp.	3022.770
6110*	Rupicolous calcareous or basophilic grasslands of the Alysso-Sedion albi	144.080
6210*	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites)	634.100
6220*	Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea class	14106.970
62A0.	Eastern sub-Mediterranean dry grasslands	4222.090
62D0.	Oro-Moesian acidophilous grasslands	6.550
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	1.960
6510	Lowland hay meadows	44.680
6520	Mountain hay meadows	71.690
8210	Chasmophytic vegetation on calcareous rocky slopes	457.190
8220	Chasmophytic vegetation on siliceous rocky slopes	690.070
8230	Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo albi-Veronicion dillenii	1479.930
8310	Caves not open to the public	NP**
9130	Asperulo-Fagetum beech forests	1141.670
9150	Medio-European limestone beech forests of the Cephalanthero-Fagion	341.590
9170	Galio-Carpinetum oak-hornbeam forests	4166.000
91AA*	Eastern white oak woods	14225.900
91M0.	Pannonian-Balkan turkey oak –sessile oak forests	63263.170
91W0.	Moesian beech forests	6552.680
91E0*	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Pandion, Alnion incanae, Salicion albae)	761.064
92A0.	<i>Salix alba</i> and <i>Populus alba</i> galleries	2.160
92C0.	<i>Platanus orientalis</i> woods	31.150
92D0.	Southern riparian galleries and thickets (Nerio-Tamaricetea and Securinegion tinctoriae)	50.013
9530*	Sub-mediterranean pine forests with endemic black pines	98.060

** - Not applicable.

Species:

Code	SPECIES	Potential habitats in the PA / ha
<i>Bats*</i>		
1302	Rhinolophus mehelyi	39742.028

Code	SPECIES	Potential habitats in the PA / ha
1303	Rhinolophus hipposideros	46062.022
1304	Greater horse-shoe bat (Rhinolophus ferrumequinum).	40155.511
1305	Rhinolophus euryale	35099.266
1306	Rhinolophus blasii	128421.389
1308	Barbastella barbastellus	36270.349
1323	Myotis bechsteinii	45586.441
1307	Myotis blythii	181362.412
1316	Myotis capaccinii	65606.303
1321	Geoffroy's bat (Myotis emarginatus).	122389.191
1324	Myotis myotis	181362.412
1310	Miniopterus schreibersi	65831.391
<i>Land mammals</i>		
1335	European souslik (Spermophilus citellus)	4204.920
2617	Mouse-tailed dormouse (Myomimus roachi)	14284.290
1352	European wolf (Canis lupus)	121785.713
1354	Brown bear (Ursus arctos)	3017.353
1355	Otter (Lutra lutra)	13780.209
2635	Vormela peregusna	19730.529
<i>Amphibians and reptiles</i>		
1171	Southern Crested Newt (Triturus karelinii)**	33464.359
1193	Yellow-bellied toad (Bombina variegata)	211725.508
1219	Iberian tortoise (Testudo graeca)	200517.242
1217	Hermann's tortoise (Testudo hermanni)	208876.995
1220	European pond tortoise (Emys orbicularis).	82938.882
1222	Caspian terrapin (Mauremys caspica)	47537.123
5194	Dione's snake (Elaphe quatorlineata sauromates)	181453.272
<i>Fish</i>		
1130	Asp (Aspius aspius)	3635.183
1134	Amur bitterling (Rhodeus amarus)	4969.383
1146	Ray-finned fish (Sabanejewia aurata)	950.308
1149	Spined loach (Cobitis taenia)	6031.787
5088	Barbel (Barbus cyclolepis)	ND**
<i>Invertebrates</i>		
1032	Thick Shelled River Mussel (Unio crassus)	4297.900
1093	Stone crayfish (Austropotamobius torrentium)	1028.400
4045	Coenagrion ornatum	8140.363
1060	Lycaena (Lycaena dispar)	20038.248
1065	Euphydryas aurinia	30229.242
1074	Eastern eggar (Erigaster catax)	39256.593
6199	Euplagia quadripunctaria	149408.421
4032	Dioszeghyana schmidtii	46416.177
1083	Stag beetle (Lacanus cervus)	139718.166
1084	Osmoderma eremita	60974.155
1087	Alpine longhorn beetle (Rosalia alpina)	24011.953
1088	Greater Capricorn Beetle (Cerambyx cerdo)	104966.716
1089	Long-horned beech beetle (Morimus funereus)	130822.179
4022	Probaticus subrugosus	7325.656
4053	Paracaloptenus caloptenoides	112625.130

Code	SPECIES	Potential habitats in the PA / ha
<i>Plants</i>		
2327	Lizard orchid (<i>Himantoglossum caprinum</i>).	NP

* - in respect of cave-dwelling species – surface area of potential hunting habitats;
 ** - the model of potential habitats covers only the westernmost part of the zone; *** - no data.

IV.1. Byala Reka Protected Area, BG0002019

Area protected pursuant to the Wild Birds directive. Its surface area is 44626.646 ha

Characteristic:

The area covers the watershed area of the Byala Reka River in the easternmost part of the Eastern Rhodopes, in immediate proximity to the Greek border. It includes the Byala Reka River valley and its surrounding mountain hills between the village of Chernichevo to the west and the place in which the river crosses the state border to the east. The vegetation in the region is highly diverse and is subject to strong Mediterranean influence. The low population densities and border-line regimen have allowed preservation of forests of Moesian beech (*Fagus sylvatica* L. subsp. *Moesiaca*) and Durmast oak (*Quercus dalechampii*). Also, mixed forests of durmast oak, Virgil oak (*Quercus virgiliana*), Italian oak (*Quercus frainetto*) and pubescent oak (*Quercus pubescens*), mixed in places with Oriental hornbeam (*Carpinus orientalis*) are widespread. Highly diverse Mediterranean type scrub communities are also well represented in the region, dominated by mock privet (*Phyllirea latifolia*), red juniper (*Juniperus oxycedrus*), and Christ's thorn (*Paliurus spina-christi*), flowering ash (*Fraxinus ornus*) etc. The river is relatively deep and its water is not polluted. The river bed is sandy to stony. Its banks are overgrown with willows (*Salix* spp.), Oriental plane-tree (*Platanus orientalis*), and shrub. Singular rocks of relatively small height occur in isolated places in the region. Farmlands around the settlements occupy a very small part of the overall area.

Subject of Protection

No.	Species	Local population	Migratory population		
			Breeding	Wintering	Passing
1	<i>Accipiter brevipes</i>		2 pairs		
2	<i>Accipiter nisus</i>	3-18 pairs			
3	<i>Actitis hypoleucos</i>		3-4 pairs		
4	<i>Aegypius monachus</i>	46 individuals			
5	<i>Alcedo atthis</i>	10-21 pairs			9 individuals
6	<i>Anas platyrhynchos</i>	2 pairs			
7	<i>Anthus campestris</i>	2 pairs			
8	<i>Aquila chrysaetos</i>	2-3 pairs			
9	<i>Aquila heliaca</i>	1-2 pairs			
10	<i>Aquila pomarina</i>		4-12 pairs		
11	<i>Ardea cinerea</i>			3-15 individuals	P
12	<i>Bubo bubo</i>	2 pairs			
13	<i>Burhinus oedicnemus</i>		2 pairs		
14	<i>Buteo buteo</i>	19-30 pairs			
15	<i>Buteo rufinus</i>	4-5 pairs			
16	<i>Caprimulgus europaeus</i>		136-326 pairs		
17	<i>Charadrius dubius</i>		12-24 pairs		

No.	Species	Local population	Migratory population		
			Breeding	Wintering	Passing
18	<i>Ciconia ciconia</i>		5 pairs		
19	<i>Ciconia nigra</i>		6-18 pairs		
20	<i>Circaetus gallicus</i>		9-11 pairs		
21	<i>Circus pygargus</i>		1 pairs		
22	<i>Coracias garrulus</i>		6-9 pairs		
23	<i>Dendrocopos leucotos</i>	15-19 pairs			
24	<i>Dendrocopos medius</i>	100-150 pairs			
25	<i>Dendrocopos syriacus</i>	200-350 pairs			
26	<i>Dryocopus martius</i>	9-21 pairs			
27	<i>Egretta alba</i>				P
28	<i>Egretta garzetta</i>				P
29	<i>Emberiza hortulana</i>		67-194 pairs		
30	<i>Falco naumanni</i>		1 pairs		
31	<i>Falco peregrinus</i>		2 pairs		
32	<i>Falco subbuteo</i>		7 pairs		
33	<i>Falco tinnunculus</i>	18 pairs			
34	<i>Falco vespertinus</i>				P
35	<i>Ficedula semitorquata</i>		2-25 pairs		
36	<i>Fulica atra</i>				P
37	<i>Gallinula chloropus</i>	1-5 pairs			
38	<i>Grus grus</i>				20 individuals
39	<i>Gyps fulvus</i>	35 individuals			
40	<i>Haliaeetus albicilla</i>				V
41	<i>Hieraaetus fasciatus</i>		3 individuals		1 individuals
42	<i>Hieraaetus pennatus</i>		2-8 pairs		
43	<i>Hippolais olivetorum</i>		30-40 pairs		
44	<i>Ixobrychus minutus</i>		1 pairs		P
45	<i>Lanius collurio</i>		4500-5500 pairs		
46	<i>Lanius minor</i>		29 pairs		
47	<i>Lanius nubicus</i>		8 pairs		
48	<i>Larus cachinnans</i>				P
49	<i>Larus ridibundus</i>				P
50	<i>Lullula arborea</i>	424-469 pairs			
51	<i>Merops apiaster</i>		290 pairs		P
52	<i>Milvus migrans</i>		2 pairs		
53	<i>Neophron percnopterus</i>		1-2 pairs		
54	<i>Nycticorax nycticorax</i>				P
55	<i>Pernis apivorus</i>		8-25 pairs		
56	<i>Phalacrocorax carbo</i>			P	
57	<i>Picus canus</i>	5-10 pairs			
58	<i>Sylvia nisoria</i>		35-45 pairs		
59	<i>Tachybaptus ruficollis</i>				P
60	<i>Tringa ochropus</i>				P
61	<i>Vanellus vanellu</i>				P

V. Description and Analysis of the likelihood and degree of impact of the plan on the conservation objects and goals of protected areas

V.1. Description and analysis of the IP impact on the types of natural habitats and the species which are subject to conservation in the protected area

Four assessment levels were accepted for identification of the degree of impact on natural habitats and species, including birds, and these levels allow consideration of the various significance parameters of the impact:

- **no impact (0)** - no natural habitats, species and their habitats that are subject to conservation in the protected zone are impacted.
- **insignificant impact (1)** - impact of short duration and/or over an insignificant part of a natural habitat or species, with sufficiently small impacted area/part of population not causing change of function and/or structure of the natural habitat/population of the species in the protected zone (Zingstra et al. 2009).

Still, these impacts are taken into account and measures for their prevention or, where possible, mitigation can be proposed following expert assessment.

- **medium impact (2)** - impact of medium duration and/or over a significant part of a natural habitat or species, but will not change any function and/or structure of the natural habitat/population of the species in the protected zone (Zingstra et al. 2009).

These impacts are taken into account also in combination with other factors which are mandatory for determining of mitigation measures aimed at preventing or reducing of impacts.

- **significant impact (3)** - impact of long duration and/or over a significant part of the respective natural habitat or species, but could change the functions and/or the structure of the natural habitat/population of the species in the protected zone (Zingstra et al. 2009, in the cases where the parameter ‘Occupied area within the zone’ for the natural habitat/species habitat is assumed to be Unfavourable – poor status with ‘Reduction equivalent to a loss of more than 1% per year over a specific period...’).

In the case of significant impact adequate, doable and controllable measures must be applied for its mitigation. Should these measures assessed as not changing the degree of impact, alternative solutions must be proposed and considered.

As regards amphibians and reptiles, a specific impact assessment scale is applied since the methodical evaluation approach (according to the results of the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project, MOEW 2022; see the Methods for evaluation of the Favourable Conservation Status of the respective species) differ significantly from the approach used for other animal groups and for the natural habitats. The levels accepted here for evaluation of the level of impact are defined as follows:

Level 0 – No impact. No impact is expected on the species which do not occur in the affected protected zone (not registered during the authors’ own field studies, with no data in published literature about its presence in this territory; no potential habitats of the species in the protected zone according to the relevant specific report under the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW 2022).

Level 1 – Minor impact. The expected impact will be of short duration, spatially limited (within not more than 1% of the surface area of the species’ potential habitats in the zone identified in the relevant specific report, according to the results from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW 2022) and will not change the nature conservation status of the species in the protected zone according to any criterion. The impact may be naturally compensated by the ecosystem or limited through the application of measures. The need for measures is based on an expert

assessment, except for the cases where the nature conservation status of the species in the protected zone is defined as ‘unfavourable - poor’ (according to the relevant specific report under the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW 2022) in which case the application of measures and/or alternative solutions is mandatory.

Level 2 – Medium impact. The expected impact will be of long duration and/or will affect a significant area (more than 1% of the surface area of the species’ potential habitats in the zone identified in the relevant specific report, according to the results from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW 2022) but will not change the nature conservation status of the species in the protected zone according to any criterion. The application of measures (and/or alternative solutions if the nature conservation status of the species in the protected zone under consideration is ‘unfavourable - poor’) that could reduce the impact level to 1 - insignificant impact.

Level 3 – Significant impact. The expected impact will be of long duration and/or will affect a significant area (more than 1% of the surface area of the species’ potential habitats in the zone identified in the relevant specific report, according to the results from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW 2022) and will change the nature conservation status of the species in the protected zone according to one or more criteria.

In the case of significant impact adequate, doable and controllable measures must be applied for its mitigation. Should these measures assessed as not changing the degree of impact, ‘alternative solutions’ must be proposed and considered.

V.1.1. Rhodopes - Eastern Protected Zone, BG0001032

Description and analysis of the IP impact on the types of natural habitats which are subject to conservation in the protected zone

There are 27 natural habitats which are the subject of protection in the protected zone, including habitats newly established in the zone during the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW 2022).

11 habitats classified according to EUNIS (Davies et al. 2004) were established during the field studies in the studied area (SA) – a 700 m. buffer from the boundaries of both pits, plus 110 m. from the borders of all IP elements (for details see item VII) were established with 7 listed in Attachment 1 of the Biodiversity Act and being the subject of protection in the zone (Table V.1.1-1, Attachment V.1.1-1). Four of these habitats will be directly affected by the IP.

According to data from the above mentioned project, there are 6 natural habitats in the studied area (SA), two of which – 5130 and 6220, were not established by ourselves, with 4 being directly affected. All natural habitats, 7 in total, are reviewed below.

Table V.1.1-1. Types of habitats in the studied area (SA) and within the boundaries of direct impact (IP). EUNIS – EUNIS Code; Attachment 1 – Attachment 1 of the EPA Code (* - priority habitat).

No.	EUNIS	Habitat	Attachment 1	Studied Area / ha	IP area / ha
1	C2.31	Upper currents of permanent, slow-flowing rivers and streams		0.9369	0.2380
2	E1.22	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites)	6210	15.9168	1.5202

No.	EUNIS	Habitat	Attachment 1	Studied Area / ha	IP area / ha
3	E5.2	Meadows		4.6917	0.8978
4	F5.13	Arborescent matorral with <i>Juniperus</i> spp.	5210	0.9151	0.9115
5	F5.31	Helleno-Balkan pseudomauis		3.3069	0.0000
6	G1.737	Eastern white oak woods	91AA	148.1712	17.3182
7	G1.76	Pannonian-Balkan turkey oak –sessile oak forests	91M0	400.0661	95.1278
8	G3.F1	Coniferous crops		74.0565	28.7337
9	G5.81	Recently cut down places, former deciduous forests		14.0200	0.8712
10	H3.6	Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo albi-Veronicion dillenii	8230	0.2619	0.0000
11	H5.61	Unsurfaced pathways		2.1820	0.9593

5130 *Juniperus communis* formations on heaths or calcareous grass lands

Communities of *Juniperus communis*, predominantly of secondary origin, formed on calcareous terrain in submontane and montane areas – pastures or felled rarefied forests. Other xerophytic brush and grass communities attend. (Kavrakova et al. 2009).

Assessment within the PA

According to the Standard Zone Form and the Specific Report from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW, 2022), natural habitat 5130 is represented in the Protected Zone with a total surface area of 361.360 ha. GIS data from the project show the surface area as 366.05 ha. According to the Specific Project Report, the habitat status is favourable in all respects, except for the parameter ‘Occupied area within the zone’, assessed as unfavourable - poor status. No data is present to explain the cause of such a reduction.

Assessment within the IP

According to project data (MOEW 2022), parts of 1 polygon of this habitat are situated in the studied area and are not impacted directly. It was established during the field studies that a part of a polygon occupied by an oak forest and some coniferous crops (Figure V.1.1-1) had been mapped as habitat 5130. Furthermore, red juniper (*Juniperus oxycedrus*), a Mediterranean species, occurs in the oak forests in the region, while the sub-boreal *Juniperus communis* has not been established by us so far (Asyov et al. 2012). Last but not least, it should be pointed out that exclusively siliceous rocks occur in the region. All this leads to the conclusion that habitat 5130 is not represented in the studied area.

Impacts:

Habitat 5130 is not present in the studied area. **There will be no** direct or indirect impacts on the habitat and on its nature conservation status.

5210 Arborescent matorral with *Juniperus* spp.

Mediterranean and sub-Mediterranean sclerophyllous evergreen shrubs with prevalence of *Juniperus oxycedrus*. They are a final phase of degradation of the xerotherm oak forests in Southern Bulgaria. These communities have evolved in highly eroded cinnamon forest soils and, less frequently, in rendzinas. Individuals or groups of *Quercus pubescens*, *Q. virgiliana*, *Carpinus orientalis*, *Fraxinus ornus*, *Pistacia terebinthus*, *Pyrus amygdaliformis* and others occur among the *Juniperus oxycedrus* communities and comprise remnants of broad-leaved.

Shrub and grass communities dominated by *Chrysopogon gryllus*, *Dichantium ischaemum*, *Poa bulbosa*, *Poa concinna*, *Thymus atticus*, *Rhodax canus*, *Astragalus onobrychis* are a typical formation (Kavrakova et al. 2009).

Assessment within the PA

According to the Standard Zone Form and the Specific Report from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW, 2022), natural habitat 5210 is represented in the Protected Zone with a total surface area of 3022.76 ha. GIS data from the project show the surface area as 2984.76 ha. According to the Specific Project Report, the habitat status is favourable in all respects, except for the parameter 'Occupied area within the zone', assessed as unfavourable - poor status. No data is present to explain the cause of such a reduction.

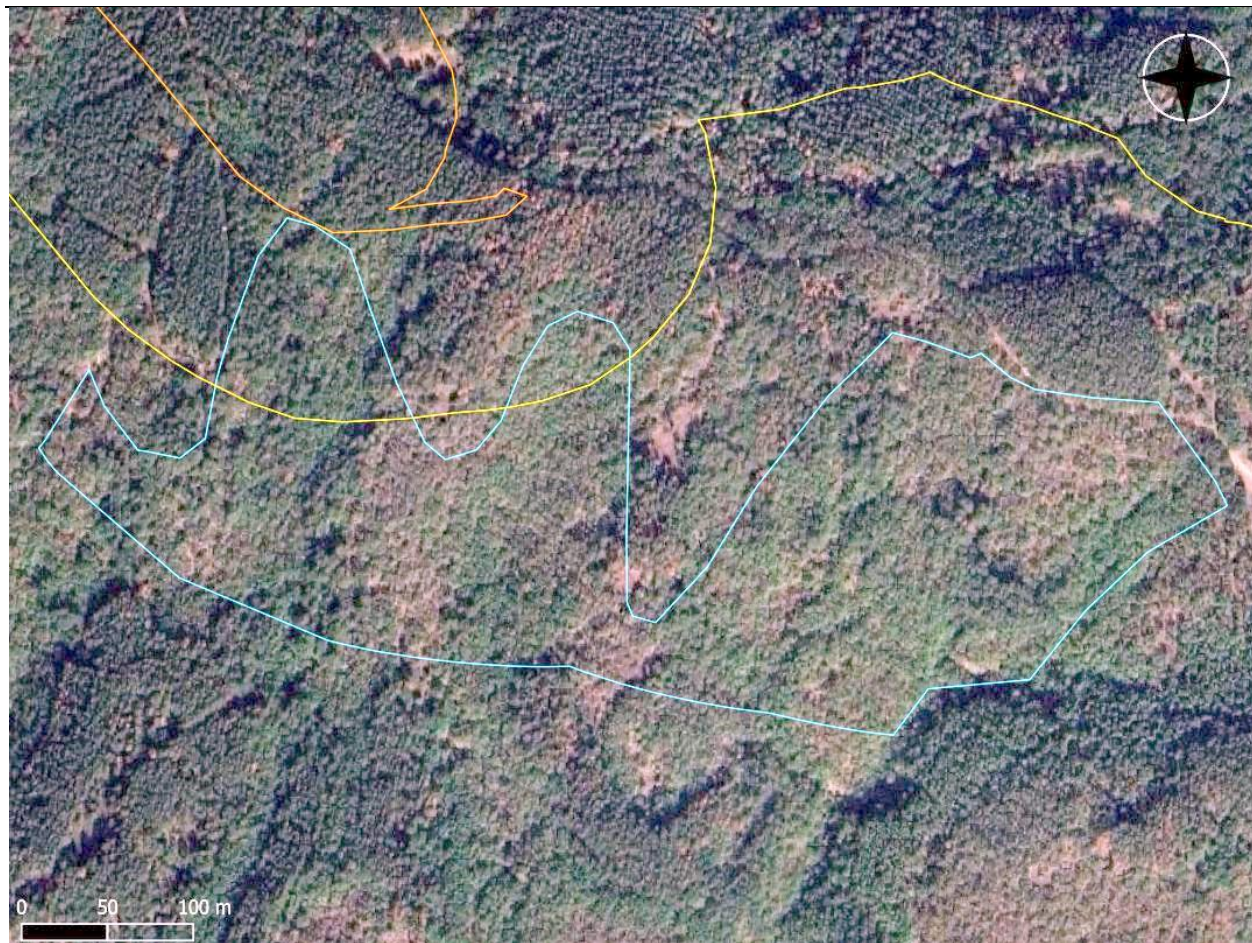


Figure V.1.1-1: A polygon occupied by habitat 5130 (light-blue outline) according to MOEW (2022) and topographic features. Orange line – IP boundary; Yellow line – boundary of the studied area.

Assessment within the IP

According to project data (MOEW 2022), 1 polygon of this habitat is situated in the studied area and is impacted directly. It was established during the field studies that parts of polygons occupied by coniferous crops (Figure V.1.1-2) had been mapped as habitat 5210. Such vegetation cannot be classified as natural habitat 5210. We found this habitat in the northern part of the studied area and 1 polygon is situated there. These are juniper groupings dominated by *Juniperus oxycedrus* (Figure V.1.1-3) and occupying terrains mainly along oak communities and frequently are in a stage of succession between grass and forest ID They prefer shallower and

skeletal soils forming along the periphery of forest communities. Where the groups are dense, nothing else is present among the juniper individuals, while grass complexes of the same composition typical of the surrounding areas of the 91AA natural habitat type occur among 'looser' groups. The following plant species were established there: *Chrysopogon gryllus*, *Dactylis glomerata*, *Rosa sp.*, *Gypsophila muralis*, *Tragopogon sp.*, *Sanguisorba minor*, *Quercus sp.*, *Carpinus orientalis*, *Pyrus amygdaliformis*, *Hypericum olympicum*, *Eryngium campestre*, *Anthemis sp.*, *Paliurus spina-christi*, *Cistus incanus*, *Rubus sp.*, *Ranunculus sp.*, *Muscari sp.*, *Petrorhagia velutina*, *Rumex sp.*, *Convolvulus cantabrica*, *Alium sp.*, *Galium aparine*, *Calamintha nepeta*, *Lolium perenne*, *Achillea millefolium*, *Achillea clypeolata*, *Trifolium arvense*, *Dorycnium herbaceum*, *Vicia sp.*. This habitat will be directly affected by the IP.



Figure V.1.1-2: Polygons occupied by habitat 5210 (light-blue outline) according to MOEW (2022) and topographic features. Orange line – IP boundary; Yellow line – boundary of the studied area.

Impacts:

Direct destruction of natural habitats

According to our own mapping, the direct impact area includes 0.9115 ha, or 0.031% of the surface area of this habitat in the zone. Considering the small affected area, the impact, including on the parameter Area occupied in the zone, is assessed as **insignificant**, all the more so as the IP encroaches upon areas which are not included in the zone reference area.

Fragmentation of natural habitats

The IP will affect one polygon of this habitat without splitting it. However, the remaining unaffected area will be very small – 0.0036 ha., and may lose its habitat 5210 features. Thus,

0.9151 ha or 0.031% of the surface area of this habitat in the zone, including the directly destroyed area, may be affected. The impact, including on the parameter Area occupied in the zone, is assessed as **insignificant**, all the more so as the IP encroaches upon areas which are not included in the zone reference area.



Figure V.1.1-3: Habitat 5210.

There will be no impact on the remaining nature-conservation status parameters for this habitat.

6210(*) Semi-natural dry grasslands and scrubland facies on calcareous substrates (FestucoBrometalia) (*important orchid sites)

Xerotherm to mesoexotherm grass communities over calcareous foundation, of the Festucetalia valesiacae order. These are represented both by continental or sub-continental pastures or meadow steppes, and by multi-annual grass communities over rocky slopes of the sub-Mediterranean regions. Many of these communities are secondary – taking over destroyed forests. They are extremely diverse. Most frequent dominants are *Chrysopogon gryllus*, *Dichanthium ischaemum*, *Stipa spp.*, *Festuca valesiaca* and, less often, multi-annual *Bromus spp.* in sub-montane areas of Western Bulgaria (Kavrakova et al. 2009).

Assessment within the PA

According to the Standard Zone Form, this habitat covers 634.100 ha. in the zone and this is the number stated in the specific report. According to the GIS data from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW, 2022), natural habitat 6210 is represented in the Protected Zone with a total surface area of 5925.31 ha. An obvious error has been made in the specific report since the number is one order of magnitude lower, while the maps are consistent with the GIS data provided to us

and used during the analysis. According to the Specific Project Report, this habitat is in a favourable status in all respects.

Assessment within the IP

According to data from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW 2022), the studied area includes 2 polygons of this habitat, one of which will be affected directly. It was found during the field studies that grass-covered areas of small size surrounded by oak forests have been mapped as habitat 6210, although they comprise meadows of varying vegetation structure and composition, although some of the species are common for both the meadows and the habitat 6210. One of the polygons is partially occupied by red juniper and we classified it as habitat 5210. At the same time, other polygons situated mainly along the northern periphery of the studied area are of sufficient area and vegetation that are consistent with habitat 6210. These communities are rich in flora, the main grass-stand comprising representatives of the orders *Festuca* and *Bromus*, as well as *Chrysopogon gryllus* (Table V.1.1-2). Species such as *Dorycnium herbaceum*, *Teucrium chamaedrys*, *Sanguisorba minor*, *Eryngium campestre*, *Dactylis glomerata*, *Poa bulbosa*, *Convolvulus cantabrica*, *Cistus incanus* and many others occur. Individual *Juniperus oxycedrus*, *Rosa canina*, and *Paliurus spina-christi* shrubs occur but do not cover more than 2 - 5% of the property. Only one orchid species – *Orchis papilionacea*, has been established in this habitat, and is widespread in the region, with a numerous population west of Rozino village, outside the IP territory (see the IP EIA Report). This shows that habitat 6210 in the IP is of the non-priority type.

Table V.1.1-2: Composition of species in habitat 6210; The evaluation of plant species is in accordance with the five-point Brown - Blanke (Guinochet 1973) rating.

No.	Species	Score	No.	Species	Score
1	<i>Chrysopogon gryllus</i>	3	32	<i>Hypericum sp.</i>	+
2	<i>Festuca sp.</i>	3	33	<i>Hypochaeris sp.</i>	+
3	<i>Bromus erectus</i>	2	34	<i>Juniperus oxycedrus</i>	+
4	<i>Poa bulbosa</i>	2	35	<i>Lamium garganicum</i>	+
5	<i>Bellis perrenis</i>	1	36	<i>Linaria pelisseriana</i>	+
6	<i>Bromus sp.</i>	1	37	<i>Linaria vulgaris</i>	+
7	<i>Dactylis glomerata</i>	1	38	<i>Linum bienne</i>	+
8	<i>Dorycnium herbaceum</i>	1	39	<i>Orobanche sp.</i>	+
9	<i>Muscari sp.</i>	1	40	<i>Paliurus spina-christi</i>	+
10	<i>Orchis papilionacea</i>	+	41	<i>Petrorhagia velutina</i>	+
11	<i>Achillea millefolium</i>	+	42	<i>Polygala major</i>	+
12	<i>Allium sp.</i>	+	43	<i>Potentilla argentea</i>	+
13	<i>Anthemis austriaca</i>	+	44	<i>Quercus sp.</i>	+
14	<i>Campanula sparsa</i>	+	45	<i>Ranunculus sp.</i>	+
15	<i>Capsella bursa-pastoris</i>	+	46	<i>Roripa thracica</i>	+
16	<i>Carduus candicans</i>	+	47	<i>Rosa canina</i>	+
17	<i>Cichorium intybus</i>	+	48	<i>Rubus caesius</i>	+
18	<i>Cistus incanus</i>	+	49	<i>Rumex acetosella</i>	+
19	<i>Convolvulus cantabrica</i>	+	50	<i>Salvia sp.</i>	+
20	<i>Cruciata glabra</i>	+	51	<i>Sanguisorba minor</i>	+
21	<i>Cynodon dactylon</i>	+	52	<i>Sedum sp.</i>	+

No.	Species	Score	No.	Species	Score
22	<i>Echium vulgare</i>	+	53	<i>Silene conica</i>	+
23	<i>Erodium cicutarium</i>	+	54	<i>Taraxacum officinalis</i>	+
24	<i>Eryngium campestre</i>	+	55	<i>Teucrium chamaedrys</i>	+
25	<i>Euphorbia cyparissias</i>	+	56	<i>Thlaspi sp.</i>	+
26	<i>Euphorbia myrsinites</i>	+	57	<i>Thymus sp.</i>	+
27	<i>Gypsophila muralis</i>	+	58	<i>Trifolium arvense</i>	+
28	<i>Helianthemum salicifolium</i>	+	59	<i>Trifolium campestre</i>	+
29	<i>Hieracium pilosella</i>	+	60	<i>Trifolium nigrescens</i>	+
30	<i>Chondrilla juncea</i>	+	61	<i>Verbascum sp.</i>	+
31	<i>Hordeum murinum</i>	+	62	<i>Tuberaria guttata</i>	+

Impacts:

Direct destruction of natural habitats

According to our own mapping, the direct impact area includes 1.5202 ha, or 0.026% of the surface area of this habitat in the zone. Considering the small affected area, the impact, including on the parameter Area occupied in the zone, is assessed as **insignificant**, all the more so as the IP encroaches upon areas which are not included in the zone reference area.

Fragmentation of natural habitats

The IP will affect one polygon of this habitat and will split it into parts. The remaining unaffected area will be very small – 0.0935 ha., and may lose its habitat 6210 features because of influx of ruderal species and/or shrubs. Thus, 1.6137 ha or 0.027% of the surface area of this habitat in the zone, including the directly destroyed area, may be affected. The impact, including on the parameter Area occupied in the zone, is assessed as **insignificant**, all the more so as the IP encroaches upon areas which are not included in the zone reference area.

There will be no impact on the remaining nature-conservation status parameters for this habitat.

6220* Pseudo-steppe with grasses and annuals of the Thero-Brachypodieta class

Xerotherm grass communities with predominance of cereal plants such as *Bromus fasciculatus*, *B. madritensis*, *B. intermedius*, *Brachypodium distachyon*, *Aegilops neglecta*, *A. geniculata*, *Lagurus ovatus*, *Cynosurus echinatus* etc. Low to medium-high multi-annual cereal grasses such as *Poa bulbosa*, *Cynodon dactylon*, *Dactylis glomerata ssp. hispanica* etc. are markedly co-dominant in these associations. These communities are rich in annual plants, including representatives of the orders *Euphorbia*, *Silene*, *Nigella*, *Adonis*, *Linum*, *Papaver*, *Geranium*, *Trigonella*, *Trifolium* etc., aromatic semi-bushes of the *Thymus* order, and geophytes of the orders *Allium*, *Muscari*, *Ophrys*, *Romulea* etc. The communities attributed to this habitat type are included in the associations Thero Brachypodion, Astragalo-Poion bulbosae, Trachynion distachya and Xeranthemion annui (Kavrakova et al. 2009).

Assessment within the PA

According to the Standard Zone Form and the Specific Report from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW, 2022), natural habitat 6220 is represented in the Protected Zone with a total surface area of 14106.970 ha. GIS data from the project show the surface area as 14127.43 ha. According to the Specific Project Report, this habitat is in a favourable status in all respects.

Assessment within the IP

According to data from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW 2022), the studied area includes 8 complete or partial polygons of this habitat that will not be affected directly. It was found during the field studies that in most cases polygons of 6210 habitat have been mapped as habitat 6220. As can be seen from the above floral characterisation of habitat 6210, vegetation typical of habitat 6220 was not found in any of the polygons – with annual cereal plants of the orders *Bromus*, *Aegilops* etc. being dominant.

Impacts:

Habitat 6220 is not present in the studied area. **There will be no** direct or indirect impacts on the habitat and on its nature conservation status.

8230 Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo albi-Veronicion dillenii

Pioneering communities of the Sedo-Scleranthion and Sedo albi-Veronicion dillenii associations colonizing the surface of dry siliceous, bare, inner - outside of the coastline - rocks in flat, hilly and mountainous regions up to 1,000 m. a.s.l. These communities are open and domineered by lichens, mosses and representatives of the Crassulaceae family (Kavrakova et al. 2009).

Assessment within the PA

According to the GIS data from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW, 2022), natural habitat 8230 is represented in the Protected Zone with a total surface area of 1667.43 ha. According to the Specific Project Report, this habitat is in a favourable status in all respects.

Assessment within the IP

According to data from the project (MOEW 2022), no polygons of this habitat are present in the studied area. A rock ledge occupied predominantly by shrub vegetation, among which we have mapped 4 very small polygons, was found during our field studies. These polygons comprise siliceous rocks, almost completely deprived of vegetation, which occurs only in rock fractures or over limited levelled sections (Figure V.1.1-4). Lichens domineer. The composition of species is relatively large (given the limited surface area and nature of the substrate) – with *Cistus incanus*, *Umbilicus rupestris*, *Scleranthus annuus*, *Satureja* sp., *Sedum* sp., *Alyssum* sp., *Briza maxima*, *Sesleria latifolia*, *Cerinthe minor*, *Festuca* sp., *Allium* sp., *Cardamine graeca*, *Geranium* sp. This habitat will not be directly affected.



Figure V.1.1-4: Habitat 8230.

Impacts:

The polygons established by ourselves are outside and approximately 400 m. away from the direct impact boundaries. **There will be no** direct or indirect impacts on the habitat and on its nature conservation status.

91AA*Eastern forests of pubescent oak

Light oak forests dominated by *Quercus pubescens*, on stony locations with diverse foundation rock (limestone and silicates). Frequently other tree species with similar ecology – *Quercus virgiliana*, *Carpinus orientalis*, *Fraxinus ornus* – co-dominate with the pubescent oak. They occur in transitory continental, transitory Mediterranean and Euxinian climates. Their composition of species is very rich, frequently including sclerophyllous Mediterranean elements (Kavrakova et al. 2009).

Assessment within the PA

According to the GIS data from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW, 2022), natural habitat 91AA is represented in the Protected Zone with a total surface area of 14225.90 ha. According to the Specific Project Report, this habitat is in a favourable status in all respects.

Assessment within the IP

According to data from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW 2022), the studied area includes parts of 4 polygons of this habitat, some of which will be affected directly. It was found during the field studies that this habitat is more widespread. It occupies predominantly southern, drier slopes above Yurendere, and the valleys sloping toward the Byala Reka River, as well as some valleys flowing into the Kokardja dere valley. It comprises separate oak forests on skeletal shallow soils. Rock blocks of varying sizes outcrop frequently. The weather and the anthropogenic impacts (grazing and various felling types) are the cause for their fragmentation and sometimes they are dominated by thicket. The tree stand is approximately 4 - 5 m. high, with an average diameter at chest height of 25 - 28 cm. The forest canopy is around 4 - 5 (Figure V.1.1-5). This tree stand

comprises various oak species dominated by white oak (*Quercus pubescens*). Hungarian oak (*Quercus frainetto*) and Cerris oak (*Quercus cerris*) are also present, with Durmast oak (*Quercus dalechampii*) in the higher parts. The brush storey comprises prickly juniper (*Juniperus oxycedrus*), bladder-senna (*Colutea arborescens*), dogwood (*Cornus sanguinea*), European smoke tree (*Cotinus coggygria*) etc. The composition of species at the ground-level storey is relatively rich (Table V.1.1-3).



Figure V.1.1-5: Habitat 91AA.

Table V.1.1-3: Species composition of habitat 91AA.

No.	Species	Score	No.	Species	Score
1	<i>Quercus pubescens</i>	3	32	<i>Fragaria vesca</i>	+
2	<i>Quercus frainetto</i>	2	33	<i>Galium sp.</i>	+
3	<i>Carpinus orientalis</i>	1	34	<i>Geranium sanguineum</i>	+
4	<i>Juniperus oxycedrus</i>	1	35	<i>Lathyrus niger</i>	+
5	<i>Quercus cerris</i>	1	36	<i>Lychnis coronaria</i>	+
6	<i>Quercus dalechampii</i>	1	37	<i>Muscari botryoides</i>	+
7	<i>Acer monspessulanum</i>	+	38	<i>Myosotis sylvatica</i>	+
8	<i>Acer tataricum</i>	+	39	<i>Orchis purpurea</i>	+
9	<i>Colutea arborescens</i>	+	40	<i>Orlaya grandiflora</i>	+
10	<i>Cornus mas</i>	+	41	<i>Poa bulbosa</i>	+
11	<i>Cornus sanguinea</i>	+	42	<i>Polygala major</i>	+
12	<i>Cotinus coggygria</i>	+	43	<i>Ranunculus gracilis</i>	+
13	<i>Crataegus monogyna</i>	+	44	<i>Rubus caesius</i>	+
14	<i>Fraxinus ornus</i>	+	45	<i>Rumex acetosella</i>	+
15	<i>Pyrus amygdaliformis</i>	+	46	<i>Sanicula europaea</i>	+
16	<i>Sorbus aucuparia</i>	+	47	<i>Silene viscosa</i>	+

No.	Species	Score	No.	Species	Score
17	<i>Sorbus torminalis</i>	+	48	<i>Smyrnum perfoliatum</i>	+
18	<i>Achillea clypeolata</i>	+	49	<i>Stellaria sp.</i>	+
19	<i>Alliaria petiolata</i>	+	50	<i>Tanacetum corymbosum</i>	+
20	<i>Bellis perennis</i>	+	51	<i>Teucrium chamaedrys</i>	+
21	<i>Brachypodium pinnatum</i>	+	52	<i>Thamus communis</i>	+
22	<i>Cephalanthera longifolia</i>	+	53	<i>Thlaspi sp.</i>	+
23	<i>Cistus incanus</i>	+	54	<i>Thymus atticus</i>	+
24	<i>Crepis zacintha</i>	+	55	<i>Tragopogon sp.</i>	+
25	<i>Cyclamen hederifolium</i>	+	56	<i>Trifolium alpestre</i>	+
26	<i>Dactylis glomerata</i>	+	57	<i>Trifolium subterraneum</i>	+
27	<i>Daucus carota</i>	+	58	<i>Verbascum blattaria</i>	+
28	<i>Digitalis sp.</i>	+	59	<i>Veronica chamaedrys</i>	+
29	<i>Eryngium campestre</i>	+	60	<i>Viola sp.</i>	+
30	<i>Euphorbia sp.</i>	+	61	<i>Tuberaria guttata</i>	+
31	<i>Festuca heterophylla</i>	+	62	<i>Limodorum abortivum</i>	+

Impacts:

Direct destruction of natural habitats

According to our own mapping, the direct impact area includes 17.3182 ha, or 0.122% of the surface area of this habitat in the zone. Considering the small affected area, the impact, including on the parameter Area occupied in the zone, is assessed as **insignificant**, all the more so as the IP encroaches upon areas which are not included in the zone reference area.

Fragmentation of natural habitats

The IP will affect a small portion of the periphery of one large polygon of this habitat, extending far from the studied area (MOEW 2022). The remaining unaffected territory of these polygons will be of sufficient size to preserve its features of habitat 91AA. The impact, including on the Ground cover parameter, is assessed as **insignificant**.

There will be no impact on the remaining nature-conservation status parameters for this habitat.

91M0 Pannonian-Balkan Turkey Oak and Sessile Oak Forests

Sub-continental xerotherm oak forests domineered mainly by *Quercus cerris* and *Q. frainetto*. *Q. petraea* agg. participates in the submontane areas, and *Q. polycarpa* is present in the Strandja mountain. These species form the xerotherm oak belt between 150-600 (800) m throughout the country. They occur in dry but relatively rich grey forest and cinnamon soils. Their floral composition is diverse and depends on the environmental conditions. Conditionally, they can be separated into three groups:

A) Continental mixed oak forests, occurring in areas with continental and transitory-continental climate.

B) Sub-Mediterranean mixed oak forests distributed in the southern parts of Bulgaria, with many Mediterranean elements.

C) Euxinian forests of *Quercus polycarpa* occurring only in the Strandja and Eastern Stara Planina mountains. They comprise many evergreen species (Kavrakova et al. 2009).

Assessment within the PA

According to the data from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW, 2022), natural habitat 91M0 is represented in the Protected Zone with a total surface area of 63263.17 ha. According to the Specific Project Report, this habitat is in a favourable status in all respects.

Assessment within the IP

According to data from the ‘Mapping and determining the nature conservation status of natural habitats and species - Phase I’ Project (MOEW 2022), the studied area includes parts of 3 polygons of this habitat, some of which will be affected directly. The boundaries of these polygons were established more precisely during the field studies. This is the predominant habitat type in the studied area, occupying a little more of 50% of its area.. These forests are of composition that is very similar to the previous habitat, 91AA, but are more mesophytic in nature which affects both the tree storey and the grass storey. The dominant species are cerris oak (*Quercus cerris*) and/or Italian oak (*Quercus frainetto*). Other participants are white oak (*Quercus pubescens*) and eastern hornbeam (*Carpinus orientalis*), with Durmast oak (*Quercus dalechampii*) and European hornbeam (*Carpinus betulus*) in the higher parts. Same as in the previous habitat, these are comparatively young coppice woods but with a larger canopy (Fig. V.1.1-6). No brush storey is present, with some individuals or small groups of dogwood (*Crataegus sanguinea*), hawthorn (*Crataegus monogyna*) and others. The composition of the ground storey species is relatively varied, but with a low foliage projective cover of around 20 - 25% (Table V.1.1-4). Many oak trees are infected with summer mistletoe (*Loranthus europaeus*). The communities along the right-hand slope of the lower stretch of the Yuren Dere river are an exception. Their habitat, physiological and plant-health status is very good. The tree stand horizontal structure is irregular, caused by felling carried out in the past. It comprises mainly cerris oak (*Quercus cerris*) and Italian oak (*Quercus frainetto*), with frequent occurrence of individual pubescent oaks (*Quercus pubescens*; Table V.1.1-5). Also, small trees of Balkan maple (*Acer hyrcanum*), flowering ash (*Fraxinus ornus*), as well as cornel tree (*Cornus mas*), mountain ash (*Sorbus aucuparia*), walnut (*Juglans regia*) and Montpellier maple (*Acer monspessulanum*) occur. The breast-height diameter of the oak trees varies between 60 cm and 110-120 cm., with tree heights reaching 16-18 m (Figure V.1.1-7). The dominant trees develop large crowns which results in high tree-stand canopy at 9 - 10 m. The soil cover is covered solidly by fallen leaves, which when combined with the high forest canopy, leads to poor development of the grass synusium. The overall projective cover of the grass species does not exceed 10-15%, with small patches of grass vegetation forming in open areas. The proximity of the river increases air humidity below the tree canopy which causes more abundant development of climbing vegetation - lianas: traveller’s joy (*Clematis vitalba*) and ivy (*Hedera helix*). Also, this is also the reason for development of small clumps of Sweet broom (*Ruscus aculeatus*).



Figure V.1.1-6: Habitat 91M0.

Table V.1.1-4: Species composition of habitat 91M0.

No.	Species	Score	No.	Species	Score
1	<i>Quercus cerris</i>	2	33	<i>Fragaria vesca</i>	+
2	<i>Quercus frainetto</i>	2	34	<i>Galium aparine</i>	+
3	<i>Quercus pubescens</i>	2	35	<i>Genista carinalis</i>	+
4	<i>Carpinus orientalis</i>	1	36	<i>Genista tinctoria</i>	+
5	<i>Cornus mas</i>	1	37	<i>Geranium sanguineum</i>	+
6	<i>Cornus sanguinea</i>	1	38	<i>Hieracium villosa</i>	+
7	<i>Quercus dalechampii</i>	1	39	<i>Lathyrus aphaca</i>	+
8	<i>Acer hyrcanum</i>	+	40	<i>Lathyrus niger</i>	+
9	<i>Acer campestre</i>	+	41	<i>Loranthus europaeus</i>	+
10	<i>Carpinus betulus</i>	+	42	<i>Luzula hostii</i>	+
11	<i>Crataegus monogyna</i>	+	43	<i>Lychnis coronaria</i>	+
12	<i>Fagus sylvatica</i>	+	44	<i>Melica ciliata</i>	+
13	<i>Fraxinus ornus</i>	+	45	<i>Myrrhoides nodosa</i>	+
14	<i>Sorbus aucuparia</i>	+	46	<i>Myosotis sylvatica</i>	+
15	<i>Sorbus torminalis</i>	+	47	<i>Orlaya grandiflora</i>	+
16	<i>Tilia sp.</i>	+	48	<i>Platanthera chlorantha</i>	+
17	<i>Ajuga laxmanii</i>	+	49	<i>Poa bulbosa</i>	+
18	<i>Alliaria petiolata</i>	+	50	<i>Polygala major</i>	+
19	<i>Alopecurus sp.</i>	+	51	<i>Pulmonaria officinalis</i>	+
20	<i>Asparagus officinalis</i>	+	52	<i>Ranunculus gracilis</i>	+
21	<i>Asphodeline sp.</i>	+	53	<i>Ranunculus rumelicus</i>	+
22	<i>Brachypodium pinnatum</i>	+	54	<i>Rubus caesius</i>	+

No.	Species	Score	No.	Species	Score
23	<i>Briza maxima</i>	+	55	<i>Ruscus aculeatus</i>	+
24	<i>Campanula glomerata</i>	+	56	<i>Sanicula europaea</i>	+
25	<i>Campanula persicifolia</i>	+	57	<i>Smyrniurn perfoliatum</i>	+
26	<i>Crepis zacintha</i>	+	58	<i>Stellaria sp.</i>	+
27	<i>Cyclamen neapolitanum</i>	+	59	<i>Tanacetum corymbosum</i>	+
28	<i>Dactylis glomerata</i>	+	60	<i>Teucrium chamaedrys</i>	+
29	<i>Daucus carota</i>	+	61	<i>Thlaspi sp.</i>	+
30	<i>Digitalis sp.</i>	+	62	<i>Trifolium alpestre</i>	+
31	<i>Euphorbia sp.</i>	+	63	<i>Veronica chamaedrys</i>	+
32	<i>Festuca heterophylla</i>	+	64	<i>Viola sp.</i>	+

Table V.1.1-5: Composition of species in habitat 91M0 in Yuren dere

No.	Species	Score	No.	Species	Score
1	<i>Quercus cerris</i>	3	18	<i>Brachypodium sylvaticum</i>	+
2	<i>Quercus frainetto</i>	2	19	<i>Dactylis glomerata</i>	+
3	<i>Quercus pubescens</i>	+	20	<i>Poa nemoralis</i>	+
4	<i>Acer hyrcanum</i>	+	21	<i>Geum urbanum</i>	+
5	<i>Acer monspessulanum</i>	r	22	<i>Arum maculatum</i>	+
6	<i>Fraxinus ornus</i>	+	23	<i>Geranium robertianum</i>	+
7	<i>Carpinus betulus</i>	+	24	<i>Carex sp.</i>	+
8	<i>Viburnum lantana</i>	+	25	<i>Sanicula europaea</i>	+
9	<i>Sorbus torminalis</i>	+	26	<i>Myrrhoides nodosa</i>	+
10	<i>Sorbus aucuparia</i>	r	27	<i>Ruscus aculeatus</i>	+
11	<i>Juglans regia</i>	r	28	<i>Melittis melissophyllum</i>	+
12	<i>Carpinus orientalis</i>	+	29	<i>Lathyrus niger</i>	+
13	<i>Cornus mas</i>	r	30	<i>Orchis purpurea</i>	+
14	<i>Juniperus oxycedrus</i>	+	31	<i>Cephalanthera longifolia</i>	+
15	<i>Hedera helix</i>	+	32	<i>Laser trilobum</i>	+
16	<i>Clematis vitalba</i>	+	33	<i>Fritillaria pontica</i>	+
17	<i>Tamus communis</i>	+			

Impacts:

Direct destruction of natural habitats

According to our own mapping, the direct impact area includes 95.1278 ha, or 0.15% of the surface area of this habitat in the zone. In view of the small affected area, the impact, including the impact on the parameter Area occupied in the zone, is assessed as insignificant.

Fragmentation of natural habitats

The IP will be a part of a very large polygon extending far from the studied area (MOEW 2022). The remaining unaffected territory of these polygons will be of sufficient size to preserve its features of habitat 91M0. The impact, including on the Ground cover parameter, is assessed as **insignificant**.



Figure V.1.1-7: Habitat 91M0 in Yuren dere

There will be no impact on the remaining nature-conservation status parameters for this habitat.

Description and analysis of the IP impact on the types of species which are subject to conservation in the protected zone

2327 Lizard orchid (*Himantoglossum caprinum*)

Usually, the lizard orchid occurs in open sunny locations, on dry calcareous stony soils, in lightly used pastures, among shrubs and in forest meadows in light deciduous forests. Normally its populations occupy small areas (0.01 - 1 ha) and are small in number (up to 50 - 100 plants). This orchid occurs throughout the country, although in limited numbers and up to 1,100 m. a.s.l. It is relatively more abundant in the karst regions of the northern Balkan area, the

Stara Planina mountain, the Znepolski region, and the Easter Rhodopes (Peev 2011, Delforge 2006).

Evaluation of the species in the zone

No population density information is present in the standard form where the species is designated as rare (R). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase II' Project (MOEW 2022), this species was found in 4 areas in the zone and it is likely that its numbers are high. The habitats of this species in the zone cover 2.68 ha. According to the Specific Project Report, this species is in a favourable status in all respects with the exception of two parameters under the criterion Future prospects related to expansion of the road network in the zone.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the species is not present in the studied area. Also, no suitable habitats are present. The species was found during the field studies in the southern periphery of the studied area, in a rarefied section of habitat 91M0, more than 600 m. away from the IP boundaries.

Impacts:

Direct habitat destruction

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, this species is not present in the IP area. Also, no suitable habitats are present. **There will be no** impact on the habitats of this species in the zone, including on the parameter Total surface area of the habitat.

Habitat fragmentation

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, this species is not present in the IP area. Also, no suitable habitats are present. **There will be no** fragmentation.

Destruction of individuals

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, this species is not present in the IP area. Also, no suitable habitats are present. There will be no destruction of individuals, including impact on the parameters under Criterion 1. Populations within the zone.

There will be no impact on the remaining nature-conservation status parameters for this habitat.

1335 European souslik (*Spermophilus citellus*)

This species occurs throughout the country and up to 2,500 m. in the mountains. It occupies uncultivated lands (fallow land, pastures, meadows etc.), covered with low grass vegetation, on homogeneous and loosely packed water permeable soils. It does not settle in arable lands where it may enter for food. This species is terrestrial and diurnal. It forms intra-population local groups ('colonies') that cover 3–5 ha, and, rarely, 100–150 ha, where individual animals inhabit overlapping individual sections and maintain a system of nest and shelter holes. Its annual cycle is strictly periodical: hibernation, waking up and mating, pregnancy and lactation, preparation for hibernation. The species breeds once per year. The females give birth to up to 7 and, rarely, 9 young. The souslik feeds on the green parts of grass vegetation, bulbs, seeds, insects and, rarely, vertebrate animals (Golemanski 2011).

Evaluation of the species in the zone

According to the standard form, the zone is inhabited by 11 colonies. The species is designated as rare (R). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), its optimal habitat area is 4,204.92 ha, and the sub-optimal habitats cover 48,280.8 ha. According to the Specific Project Report, the status of this species is unfavourable - poor in respect of the parameters Number of habitats, Height of grass vegetation in present and former habitats, Intensity of grass cutting in meadows, and unfavourable – unsatisfactory in respect of the parameters Abundance, Total area of former habitats, Projected cover of scattered scrub and tree vegetation in present and former habitats.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the region under consideration includes 1 polygon with optimal habitats of this species. It was found during our field studies that areas unsuitable for the species have been mapped as its potential habitats - a part of a polygon occupied by a 91AA habitat that together with its adjacent meadows is unsuitable for this species and cannot be its potential habitats. It is our opinion that only the terrains occupied by grass habitats and abandoned meadows around Rozino village may be regarded as potential habitats for this species, although it was not found there and these areas are outside the studied area. Furthermore, they are suboptimal because they have been ploughed in the recent past.

Impacts:

Direct habitat destruction

No potential habitats of this species are present in the studied area. **There will be no** impact, including on the parameter Total area of potential habitats in the zone.

Habitat fragmentation

The IP will have no effect on any potential habitats of this species. **There will be no** fragmentation, including any impact on the parameter Total area of potential habitats in the zone.

Barrier effect

No potential habitats of this species, including habitats functioning as bio-corridors, exist in the boundaries of maximum impact. The studied area is occupied by forest habitats, shrubs and small grassy areas. **There will be no** impact, including on the parameter Availability of biocorridors between the habitats.

Disturbance

No potential habitats of this species, including habitats functioning as bio-corridors, exist in the boundaries of maximum impact. **There will be no** impact, including on the parameters Number of habitats inhabited by souslik, and Abundance.

Mortality

The IP will not affect potential habitats of the species, including habitats functioning as bio-corridors. **There will be no** mortality, including impacts on the parameters Number of habitats inhabited by souslik, and Abundance.

There will be no impact on the remaining nature-conservation status parameters for this habitat.

2617 Mouse-tailed dormouse (*Myomimus roachi*)

A rare species occurring in South-Eastern Bulgaria - the eastern part of the Eastern Rhodopes, Sakar, Dervent heights, Western Strandja, the Burgas region (Sredets, Kameno, Burgas and Nesebar municipalities). It occupies open spaces - dry pastures and scrub with scattered or grouped shrubs and trees, abandoned farm lands, meadow edge areas, orchards and vegetable gardens, and abandoned vineyards. According to more recent studies, the optimal

habitat for this species are semi-open grassy areas with shrub (*Prunus spinosa*, *Paliurus spinachristi*) and single old trees or groups of old trees (*Quercus* sp. and *Pyrus communis*) in whose hollows it lives. This species avoids forest habitats. The mouse-tailed dormouse feeds mainly on seeds, fruits and vegetative parts of near-by plants (at up to few tens of meters away) from its shelters, foraging predominantly on trees and shrubs, but, also, on the ground. It is a mainly nocturnal species. It hibernates between the second half of September and the first half of April. It hibernates during the summer too. The species produces one generation per year. Perhaps the copulation occurs between late April and the first half of May. It gives birth in June. The number of the young is 5 to 9 and the females become sexually mature after the first wintering (Golemanski 2011, Peshev et al. 2004, MOEW 2022, Nedyalkov et al. 2018, Nedyalkov et al. 2022).

Evaluation of the species in the zone

According to the standard form for the area, this species is known here from 2 habitats. Its designated as very rare (V). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), its potential habitat area is 14,284.29 ha. According to the Specific Project Report, this species is in a favourable status in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the region under consideration includes 14 small polygons or parts of small polygons with potential habitats of this species. It was found during the field studies that areas unsuitable for this species have been mapped as its potential habitats, such as parts of polygons occupied by forest habitats, including coniferous forests and meadows that are unsuitable and cannot be potential habitats for the species, and furthermore, this area is on the western border, if not outside, of the species' range (Kryštufek 2008, Nedyalkov et al. 2018). It is our opinion that only the terrains occupied by grass habitats and abandoned meadows south of the Rozino village may be regarded as potential habitats for this species and they are outside of the direct impact.

Impacts:

Direct habitat destruction

The IP will have no direct effect on any potential habitats of this species. **There will be no** impact, including on the parameter Total area of potential habitats in the zone.

Habitat fragmentation

The IP will have no effect on any potential habitats of this species. **There will be no** fragmentation, including impacts on the parameter Total area of potential habitats.

Barrier effect

The IP will not affect potential habitats of the species, including habitats functioning as bio-corridors. The studied area is occupied predominantly by forest habitats, shrubs and small grassy areas. **There will be no** impact, including the parameter Total fragmentation in the habitats of the species by linear facilities.

Disturbance

Potential habitats of the species are situated within the maximum impact boundaries but are at the western boundary, if not outside, of its range. This is a small rodent which, being diurnal, is not highly sensitive to disturbance. **There will be no** impact, including on the parameters Number of habitats and Abundance of the population in the habitat.

Mortality

The IP will not affect potential habitats of the species, including habitats functioning as bio-corridors. **There will be no** mortality, including on the parameters Number of habitats and Abundance of the population in the habitat.

There will be no impact on the remaining nature-conservation status parameters for this habitat.

1352 European wolf (*Canis lupus*)

The populations of this species in the mountain and border-area regions of Western Stara Planina, South-Western Bulgaria, the Eastern Rhodopes, Sakar, Strandja and other parts of Bulgaria are constant. This species, following the trend of former years to disappear completely from Bulgaria, has during the recent years expanded its territorial range and its numbers are increasing steadily. It inhabits mainly forest areas but has adapted to open areas as well. The wolf is highly mobile. It is a monogamous species with lifelong pairs. The mating couples form from late December to early February. Usually it lives in groups, most frequently comprising a breeding pair (alpha male and female) and its older generation. Territorial species. During the breeding period the group (pack) inhabits hard-to-access areas with forests, shrub, rocks, gorges, or meadows and stays close to the den in which the alpha pair raises the cubs. During the autumn and winter, when the cubs are weaned and growing, the species utilize a larger territory, descending even to lowlands in search of food and can be seen anywhere where food is available such as ungulate mammals, but also hares, rodents, carrion, and birds, and generally avoids areas with increased human presence. The oestrus is in January through February. The cubs, 4 to 6 on average, are born in April. The family territory is 10,000 to 25,000 ha. Wolves travel 50 - 60 km. within their territory overnight. The average population density of wolves in Bulgaria is 2-4 individuals per 10,000 ha.

Evaluation of the species in the zone

The zone is occupied by 25-30 individuals, according to the standard form. According to the report from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), these individuals are distributed among 5 family groups. The surface area of their potential habitats is 121,785.71 ha, while the areas suitable for a core zone (shelter during breeding) is 14,680 ha. According to the Specific Project Report, this species is in a favourable status in all respects except for two parameters related to hunting pressure on the species in the region – Mortality and Direct human persecution.

Evaluation of the species in the studied region

According to the MOEW (2022), there are habitats of this species in the studied area, but none of them is suitable for a core zone. Our field studies showed that the entire studied area is suitable for wolves which are a highly mobile species whose distribution depends only on the presence of prey and absence of highly anthropogenic presence. We established frequent occurrence of roe deer (*Capreolus capreolus*) and wild boar (*Sus scrofa*), presence of fallow deer (*Cervus elaphus*) and abundance of wild hares (*Lepus europaeus*) in the studied area. The numbers of extensively bred livestock is also high compared to the human population numbers in the region. This defines the entire region as a suitable habitat for wolves.

Impacts:

Direct habitat destruction

According to our field studies, the IP will affect 146,58 ha. or 0.12% of the habitats of this species in the zone. No habitats suitable for core zones will be affected. Considering the small affected area, the impact, including on the parameter total area of suitable non-fragmented

habitats, is assessed as **insignificant**, all the more so as the IP encroaches upon areas which are not included in the zone reference area.

Habitat fragmentation

The IP will affect a comparatively small part of a much larger polygon with potential habitats of this species. The remaining part, spreading far to the west according to the MOEW (2022) and, in our opinion, in all other directions will be of sufficient size to retain its characteristics as a habitat for the species (a vast complex of forested and open areas rich in prey and rarely settled). Fragmentation, including the impact on the parameter Total area of suitable non-fragmented habitats, is assessed as **insignificant**, all the more so as the IP encroaches upon areas which are not included in the zone reference area.

Barrier effect

The IP will affect a comparatively small part of a much larger polygon with potential habitats of this species. Given the high mobility of this species and its predominantly nocturnal activity, and the presence of suitable habitats throughout the areas around the IP and in the potentially disturbed areas, the barrier effect, if any, including the impact on the parameters Fragmentation of habitats and Connectivity of habitats, will be **insignificant**.

Disturbance

433.02 ha or 0.36% of the potential habitats of the species in the zone are situated within the boundaries of maximum impact. This territory may be unsuitable for the species during the construction and operation phases. Its relatively small size, the high mobility and predominantly nocturnal activeness of this species and, also, since no core zones are affected, the impact, including on the parameters Human activities and Driving away by motor vehicles, is assessed as **insignificant**.

Mortality

No habitats suitable for core zones will be affected by the IP. It is unlikely that slow-moving cubs will be present within the construction site areas. Adults are sufficiently agile and cautious to avoid heavy construction, mining and hauling plant. **There will be no** mortality, including impacts on the parameters under Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1354 Brown bear (*Ursus arctos*)

The main brown-bear population in Bulgaria is concentrated in two sub-populations - the Central Balkan and Rila-Rhodopean populations. As at 2007, its numbers in the Central Stara Planina mountain was 150 - 190 individuals (including cubs), and 300 - 360 in the Rila-Rhodopean massif. There are 55 - 70 and, respectively, 115 - 140 sexually mature individuals in these populations. 25 - 30 predominantly young bears wander around the adjacent mountains. Many sightings of individuals residing in areas outside the constant and stable breeding sub-populations have been registered in the past 10 years. These are the Kraishte - Karvav kamak areas and Rui, Osogovo, Konyavska mountain, and the Western Stara Planina mountain. These individuals are not defined as stable breeding units but, rather, as bears dispersing to settle in new territories. Bears inhabit coniferous and deciduous forests, usually higher than 600 - 1,000 m. a.s.l., sub-alpine shrubs, rocky areas and gorges. The females become sexually mature at 3-4 years of age, and the males become sexually active at 5 - 6 years of age. Most often breeding occurs in May - June. Females give birth once every 2-3 years, predominantly in caves, frequently around the upper forest boundary. The cubs, usually 2, are born most often in January, and leave the den in April, following their mother for 2 years. In Bulgaria, bears enter a state of 'lethargy' between late December and January. Not all bears in Bulgaria lie down for a prolonged sleep. The males often do not prepare a true den, but doze in niches. Only pregnant

females are in lethargy in Bulgaria. Usually, territorial bears cover an area between 1,500 and 5,000 ha. On average 75% of the bear diet is plants. Early in the spring, in areas without snow, bears will seek remaining acorns, stems and roots of grass and bulb plants, invertebrate animals and mouse-like rodents. It feeds on carrion of wild animals that have died during the winter. Successful catches of wild boar have been observed in feeding areas, but few bears would look for live prey throughout the year.

Evaluation of the species in the zone

The zone is occupied by 1-2 individuals, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), no permanent populations have been present in the zone for more than hundred years, and the zone is visited rarely by bears nowadays. The surface area of their potential habitats is 3,017,35 ha, while the areas suitable for a core zone (shelter during breeding) is only 1.2% of the zone area. According to the Specific Project Report, the status of this species is unfavourable-unsatisfactory for all parameters, except for the parameter Change of habitat quality (without forestry and improved motor-vehicle traffic), for which its status is favourable.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, no potential bear habitats and suitable bear den areas are present in the region under consideration.

Impacts:

No nesting habitats of this species are present in the studied area. The IP will **have no impact** on the habitats and populations of this species in the zone and on its nature conservation status.

1355 Otter (*Lutra lutra*)

Otters occur in lowlands, along the sea coastline and in the mountains, at up to 1,500 m. a.s.l. Its most dense population is present in South-Eastern Bulgaria. Otters inhabit natural river flows and impoundments which are at least 15-20 km. long, with blind-side channels and abundant riparian vegetation such as inundated forests, alder-groves and rushes (low banks), with diverse and abundant fish fauna, abundance of cray fish, frogs, vertebrates and molluscs. Territories of males may overlap the territories of 1 or more females. The dens are made between water-side tree roots. The young (2-4) are born in March - August and follow their mother for a year. Fish amounts to 93% of otters' prey in South-Eastern Bulgaria, with additional food being crustaceans, frogs, mammals, birds, and reptiles. Otters catch prey at depths of up to 4 m. (Golemanski 2011).

Evaluation of the species in the zone

There are 43 to 86 individuals in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), its potential habitat area is 13,780.21 ha. According to the Specific Project Report, this species is in a favourable status in all respects except for two parameters related to hunting pressure on the species in the region – Mortality and Poaching.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, the region

under consideration includes potential habitats of this species along the lower stretches of Yuren Dere and a small part of Kokardzha dere, and the habitats in Yuren Dere will be affected directly.

Impacts:

Direct habitat destruction

The IP will affect directly 2.34 ha or 0.017% of the habitats of the species in the zone. However, these habitats should be regarded as sub-optimal because of the substantial drop in water levels in Yuren Dere during the hot summer months, when no fish fauna is present. Given the small affected area and the sub-optimal nature of the habitat, the impact, including on the parameters Area in the zone of ponds and their banks suitable for habitation and Length of river sections, man-made channels and the surface area of their banks, suitable for habitation, is assessed as **insignificant**.

Habitat fragmentation

The IP will affect a comparatively small peripheral part, Yuren Dere, of a larger polygon with potential habitats of this species. The remaining part, Arpa Dere, will be sufficient for the area to retain its characteristics of a habitat of the species (a water basin rich in fish). The impact by fragmentation, including on the parameter Natural river bed, will be **insignificant**.

Barrier effect

The IP will affect a comparatively small peripheral part, Yuren Dere, of a larger polygon with potential habitats of this species. The upstream flow is unsuitable for the species. Considering also the sub-optimal nature of the habitats, **there will be virtually no** barrier effect, including on the parameter Fragmentation of the habitats.

Disturbance

3.99 ha or 0.029% of the potential habitats of the species in the zone are situated within the boundaries of maximum impact. This territory will be unsuitable for the species during the construction phase. Given its relatively small area and adaptivity of otters to human presence (as observed along the Struma River flow, in immediate proximity to a heavily used first-category road), the impact is defined as **insignificant**, including the impact on the parameter Intensive human presence. The habitats not affected directly during operation (Arpa dere) will be outside the impact area, including during blasting, while the part of Kokardja Dere which is within the impact area is on the periphery and is a very small part. During operation, **there will be no** disturbance, including impact on the parameter Intensive human presence.

Mortality

The IP will not affect any optimal habitats that are suitable for breeding. It is unlikely that slow-moving cubs will be present within the construction site areas. Adults are sufficiently agile and cautious to avoid heavy construction, mining and hauling plant. **There will be no** mortality, including impacts on the parameters under Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

2635 Marbled polecat (*Vormela peregusna*)

This polecat inhabits irregular flat, valley fields, forest-free areas and semi-montane areas. Most often it occurs in North-Eastern and South-Eastern Bulgaria, and in the high fields of Western Bulgaria. It inhabits meadows, pastures, stony areas, abandoned lands, including along river valleys, dry gorges and canyons. This species is observed also in arable lands, orchards, and in the edges of urban areas. It prefers locations with large colonial rodents. Its main prey are ground squirrels, hamsters, mole rats, mouse-like rodents and, rarely, frogs, reptiles, and

molluscs. The species' hunting area is 10 to 100 ha. It wanders throughout its territory and normally uses a shelter only once. Breeding occurs mainly in April - June. Pregnancy is 8 - 11 months long (with a period of latency). On average 4 - 5 young are born between January and May. (Големански 2011, Gorsuch and Lariviere 2005, Macdonald and Barrett 1993, Murariu et al. 2009).

Evaluation of the species in the zone

According to the standard form for the area, this species is known here from 2 habitats. Its designated as rare (R). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the region under consideration includes 19,730.53 ha. of potential hunting habitats of this species. According to the Specific Project Report, the status of this species is unfavourable-unsatisfactory for all parameters, except for the parameters Total area of suitable habitats, Intensity of fires, and Ploughing, change of land use, for which its status is favourable. The status of many of the parameters is assessed as unfavourable - unsatisfactory because of lack of data.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, no potential habitats of the species are present in the region under consideration.

Impacts:

Direct habitat destruction

The IP will have no direct effect on any potential habitats of this species. **There will be no** impact, including on the parameter Total area of suitable habitats in the zone.

Habitat fragmentation

The IP will have no effect on any potential habitats of this species. **There will be no** fragmentation, including impacts on the parameter Total area of suitable habitats.

Barrier effect

The IP will not affect potential habitats of the species, including habitats functioning as bio-corridors. The studied area is occupied predominantly by forest habitats, shrubs and small grassy areas. **There will be no** impact, including on the parameter Availability of biocorridors between the individual cores of suitable habitats.

Disturbance

No potential habitats of this species are present in the area of maximum impact. **There will be no** disturbance, including on the parameters Number of habitats and Number and trend of population growth.

Mortality

The IP will not affect potential habitats of the species, including habitats functioning as bio-corridors. **There will be no** mortality, including on the parameters Number of habitats and Number and trend of population growth.

There will be no impact on the remaining nature-conservation status parameters for this habitat.

1302 Mehely's horseshoe bat (*Rhinolophus mehelyi*)

This bat is known in 29 habitats in Bulgaria's lowlands, with those in North-western Bulgaria outlining the northern boundary of its range. It inhabits low-land karst areas. The species uses caves only as its shelter. It feeds mainly on moths which it catches over open-air

habitats. It forms 'mixed' breeding and wintering colonies with Blasius's Horseshoe Bats and Mediterranean horseshoe bats, numbering between several hundred to several thousand individuals. The 6 breeding colonies known so far are situated in natural caves. The birthing maximum occurs between June 20 and July 10. The bats winter mainly in caves. They do not migrate over long distances but regular seasonal movement between summer and winter shelters are observed. Individuals disperse during the summer at up to 100 km. from the winter shelters (Golemanski 2011, Petrov 2015).

Evaluation of the species in the zone

According to the standard form, the population includes 250-500 individuals, and the species is designated as rare (R). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), 1 habitat of this species is established in the zone. Its nearest breeding colony and wintering location in the area is the Aina ini cave (the Mirror cave) in the Ribino village, Krumovgrad Municipality (Petrov 2015). An area of 39742.03 ha. Has been assessed as potentially suitable hunting habitats. According to the Specific Project Report, the species status is favourable in all respects, except for the parameter Numbers in wintering habitats, in respect of which its status is unfavourable - unsatisfactory, because of lacking data (no winter habitats have been registered).

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the region under consideration includes potential hunting habitats of this species. No potential shelters are present. The nearest breeding colony and wintering location in the region is the Aina ini cave (the Mirror cave) 33 km. away (along a straight line) from the future pit in the Rozino village.

Impacts:

Direct habitat destruction

Potential hunting habitats are present in the IP boundaries, with approximately 8.0611 ha. or 0.020% of their total surface area being situated in the zone. No potential shelters are present. Destruction of habitats of this species, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant**.

Habitat fragmentation

The IP includes several polygons with potential hunting habitats of this species, some of which will be destroyed completely. The remaining parts of 3 of the polygons will be far too small to maintain the function of a potential habitat of the species. Fragmentation, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant** because of the small total area of the affected polygons.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the area of maximum impact includes potential hunting habitats of this species. However, no potential shelters exist in the region. The fact that the construction and mining operations will take place mainly during the light part of the day, while bats hunt at night, and the lack of shelters, mean that there will be no disturbance in the bats' hunting habitats. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Mortality

Same as in the IP area, also the maximum impact boundary does not include any potential shelters in which the bats are more sensitive. **There will be no** mortality risk in the hunting habitats as well because all activities will take place during the day and the bats are diurnal. **There will be no** impact on the population in the zone, including the parameters of Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1303 Lesser horseshoe bat (*Rhinolophus hipposideros*)

This is one of the most frequent bat species with more than 270 habitats in Bulgaria. It occurs throughout Bulgaria and most often is present in karst regions. It has not been sighted in the highest mountain parts. Most of the habitats are between 100-600 m. a.s.l., but the species occurs relatively frequently at heights of up to 1,300 m. It is primarily a cave-dwelling species attached most of all to vegetation-rich karst areas. Often it occurs in urban areas. It uses very diverse shelters such as buildings, basements, artificial galleries, caves etc., and prefers large openings of the shelters. This bat is relatively social but the males separate during the summer and live alone. Its breeding in Bulgaria is poorly studied. This bat forms breeding groups in May - June. Most often the breeding colonies reside in the attics and basements of residential buildings, although they inhabit also small caves and cracks in rocks. Its winter shelters are exclusively below ground - caves, mine shafts and tunnels. This bat winters separately or in rare groups with distances between the individuals. Lesser horseshoe bats are a stationary species. Usually, the summer and winter shelters are not more than 15 km. apart. The bat hunts within a broad spectrum of habitats - deciduous and mixed forests, shrub, forest edges, around overgrown rivers, around rocks in karst regions and in urban areas. Feeds on flying insects. Little is known about the trophic biology of this species in Bulgaria but the few known data show that lesser horseshoe bats use alternative shelters and trophic habitats within a radius of 5 -10 km. around their summer shelters (Golemanski 2011, Zingstra et al. 2009, Popov & Sedefchev 2003, Dietz & Kiefer 2016).

Evaluation of the species in the zone

There are 250 to 500 individuals in the population in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), this species has not been registered in the zone. In total, 15 habitats have been found. An area of 46062.02 ha. Has been assessed as potentially suitable hunting habitats. According to the Specific Project Report, this species is in a favourable status in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, the region under consideration includes potential hunting habitats of this species that will be affected directly. No potential shelters are present.

Impacts:

Direct habitat destruction

28.0979 ha, or 0.061% of the potential hunting habitats of the species in the zone are situated within the zone. No potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of suitable hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential hunting habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a hunting habitat for the species. Fragmentation, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the area of maximum impact includes potential hunting habitats of this species. No potential shelters are present. The fact that the construction and mining operations will take place mainly during the light part of the day, while bats hunt at night, and the lack of shelters, mean that there will be no disturbance in the bats' hunting habitats. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

Same as in the IP area, also the maximum impact boundary does not include any potential shelters in which the bats are more sensitive. **There will be no** mortality risk in the hunting habitats as well because all activities will take place during the day and the bats are diurnal. **There will be no** impact on the population in the zone, including the parameters of Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1304 Greater horse-shoe bat (*Rhinolophus ferrumequinum*)

This species is a common occurrence throughout Bulgaria, except for the highest mountain parts. Most habitats are located between 100 and 500 m in size. It inhabits mainly karst regions overgrown with trees and shrub. This bat uses various subterranean shelters (caves, artificial galleries, bunkers, catacombs), and cellars and attics of residential buildings. Often greater horseshoe bats inhabit the same shelter used by other cave-dwelling species. Greater horseshoe bats feed in a radius of 2 to 10 km. around their shelters, using open spaces, grove edges, shrub, and meadows, often near water bodies. Large beetles (Coleoptera) and butterflies (Lepidoptera, and, in particular, Noctuidae) and, to a lesser degree, hymenopterans (Hymenoptera) and dipterans (Diptera) comprise most of its trophic spectrum. During the summer, greater horseshoe bats use alternative shelters and trophic habitats within a radius of approximately 15 km. around their summer shelters. The females form breeding colonies between mid-April and late May. Their numbers vary between several dozens and 700 individuals. The young are born between June 1 - 25 and, rarely, later. This bat winters separately or in colonies of 50 to 600-800 individuals. One to several wintering greater horseshoe bats can be seen in almost any Bulgarian cave during the winter. This bat does not migrate over long distances in Bulgaria. Its seasonal movements between summer and winter shelters vary between 20 and 100 km (MOEW 2022, Petrov 2015).

Evaluation of the species in the zone

There are 2000 to 3000 individuals in the population in the zone, according to the standard form. The species is designated as common (C). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), 35 habitats of this species are established in the zone. An area of 40155.51 ha.

Has been assessed as potentially suitable hunting habitats. According to the Specific Project Report, this species is in a favourable status in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, no potential hunting habitats of the species are present in the region under consideration (700 m. around the deposit boundaries). No potential shelters are present. The nearest breeding colonies and wintering places for this species are the Aina ini (Mirror) cave, the Samara cave, the Bratanova cave in the Rivino and Brashlyan villages in the Krumovgrad Municipality, 33 km away, the Rupata cave near the Egrek village (winter/summer) 26 km. away, and abandoned water reserves of the ore mine near the town of Madjarovo, situated 26 km from the IP (Petrov 2015).

Impacts:

Direct habitat destruction

26.6251 ha or 0.066% of the potential hunting habitats of the species in the zone are situated within the concession No potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of suitable hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential hunting habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a hunting habitat for the species. Fragmentation, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and our field studies, the area of maximum impact includes potential hunting habitats of this species. No potential shelters are present. The fact that the construction and mining operations will take place mainly during the light part of the day, while bats hunt at night, and the lack of shelters, mean that there will be no disturbance in the bats' hunting habitats. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Mortality

Same as in the IP area, also the maximum impact boundary does not include any potential shelters in which the bats are more sensitive. **There will be no mortality risk** in the hunting habitats as well because all activities will take place during the day and the bats are diurnal. **There will be no impact** on the population in the zone, including the parameters of Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1305 Mediterranean horseshoe bat (*Rhinolophus euryale*)

This is the most widespread and numerous of the three 'medium' horseshoe bat species in Bulgaria. It is known from more than 100 habitats, most of which are 0 - 700 m. a.s.l, but winter

shelters at higher altitudes are known. It is less abundant toward the south. The bat inhabits forested karst regions near water. It is almost entirely connected with caves but in non-karst areas and also dwells in buildings in the summer. It feeds mainly on moths. The bat hunts in deciduous forests, including river-side forests, shrub, and orchards. It does not use coniferous forests and open areas. Of all breeding colonies known so far, 18 are in natural caves and one is in underground tunnels of a building. The birthing maximum occurs between June 20 and July 10. The winter colonies of the bat are numerous and found in caves and, less frequently, in artificial galleries. This bat does not migrate over long distances but moves regularly between summer and winter shelters (10 - 100 km) (Golemanski 2011, Petrov 2015, Dietz & Kiefer 2016).

Evaluation of the species in the zone

There are 500 - 1000 breeding individuals in the zone and 101-250 individuals winter in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), 6 habitats of this species are established in the zone. Its potential hunting habitats in the zone occupy 35,099.27 ha. According to the Specific Project Report, this species is in a favourable status in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, no potential hunting habitats of the species are situated in the region under consideration. No potential shelters are present. The nearest breeding colony and wintering location of the species is the Manuilova cave in the Ribino village in Krumovgrad Municipality, 33 km. away, and abandoned water reservoirs of the ore mine near the town of Madjarovo 26 km. away (Petrov 2015).

Impacts:

Direct habitat destruction

26.5668 ha or 0.076% of the potential hunting habitats of the species in the zone are situated within the concession. No potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of suitable hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential hunting habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a hunting habitat for the species. Fragmentation, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and our field studies, the area of maximum impact includes potential hunting habitats of this species. No potential shelters are present. The fact that the construction and mining operations will take place mainly during the light part of the day, while bats hunt at night, and the lack of shelters, mean that there will be no

disturbance in the bats' hunting habitats. **There will be no impact.** **There will be no impact** also on the nature-conservation status parameters for this species.

Mortality

Same as in the IP area, also the maximum impact boundary does not include any potential shelters in which the bats are more sensitive. **There will be no mortality risk** in the hunting habitats as well because all activities will take place during the day and the bats are diurnal. **There will be no impact** on the population in the zone, including the parameters of Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1306 Blasius's horseshoe bat (*Rhinolophus blasii*)

This species is relatively common in the southern parts of Bulgaria, and its occurrence and abundance are higher. The western and central parts of the northern Balkan area and the Veliko Tarnovo - Kotel - Primorsko line form a part of the northern boundary of the range of this species. It inhabits karst regions in Bulgaria's lowlands and hills. This bat hunts in open areas and shrub, including open areas with single trees and groups of trees. It uses only underground shelters such as caves and mine shafts. The bat forms colonies with hundreds to thousands of individuals, often together with the Mediterranean horseshoe bat (*Rh. euryale*) and the Mehely's horseshoe bat (*Rh. mehelyi*). The birthing maximum occurs between June 20 and July 10. Wintering colonies are known only from the Aina ini and Samara caves (Ribino village, Eastern Rhodopes), the Parnitsite cave (Bezhanovo village) and the Morovitsa cave (Glozhene village). This bat does but moves regularly between summer and winter shelters (Golemanski 2011, Dietz & Kiefer 2016).

Evaluation of the species in the zone

There are 800 - 1,200 breeding individuals in the zone and 1,000-1,500 individuals winter in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), 9 habitats of this species are established in the zone. Its potential hunting habitats in the zone occupy 128,421.39 ha. According to the Specific Project Report, this species is in a favourable status in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, no potential hunting habitats of the species are situated in the region under consideration. No potential shelters are present. The nearest breeding colony and wintering place for this species are the Aina ini (Mirror) cave, the Samara cave, the Bratanova cave in the Rivino and Brashlyan villages in the Krumovgrad Municipality, 33 km away, the Rupata cave near the Egrek village (winter/summer) 26 km. away (Petrov 2015).

Impacts:

Direct habitat destruction

95.1433 ha, or 0.074% of the potential hunting habitats of the species in the zone are situated within the zone. No potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of suitable hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a very large polygon of potential hunting habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a hunting habitat for the species. Fragmentation, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and our field studies, the area of maximum impact includes potential hunting habitats of this species. No potential shelters are present. The fact that the construction and mining operations will take place mainly during the light part of the day, while bats hunt at night, and the lack of shelters, mean that there will be no disturbance in the bats' hunting habitats. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

Same as in the IP area, also the maximum impact boundary does not include any potential shelters in which the bats are more sensitive. **There will be no** mortality risk in the hunting habitats as well because all activities will take place during the day and the bats are diurnal. **There will be no** impact on the population in the zone, including the parameters of Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1308 Barbastelle (*Barbastella barbastellus*)

The species is most often sighted in Central and Western Stara Planina mountain and in the Western Rhodopes. The highest number of shelters are found above 500 m. a.s.l. Single individuals have been registered in the lowest parts (the Kresna gorge, the Zhernov village in Pleven district, and the Chernomorets village in Burgas district). Perhaps it breeds in most of the established habitats in mountains but no specific data exists so far. The only certain information about breeding in Bulgaria is about the Kamchia River inundated forests. The humid mid-mountain forest habitats (700 - 1,400 m. a.s.l.) are the most favoured. During the summer months, this bat lives under peeling dead bark or in the cracks of deciduous trees, predominantly dead, but also live trees, avoiding those near the forest edge (less than 30 m.). The males are single during this period, while the females are social, living in colonies which can be split into smaller colonies or combined again. Both sexes change their shelterers regularly, the males doing so most frequently while nursing females which carry their young on their bellies change shelters least often. The distance between individual shelters may be as long as 1 - 3 km. This bat hunts in forests, around rivers, in open areas. The hunting areas may be as far as 20 km. from the shelters (usually between 5 and 7) and are comparatively constant for the individuals (but may overlap). Their surface area varies between 45 and 95 ha. No data about their trophic spectrum in Bulgaria exist. This bat feeds on small moths and flies in Central Europe. During the winter individuals or groups of up to 30 individuals have been found in the coldest cave entrance areas with temperatures of around 0 - 2°C. Occasionally the bat winters in the summer shelters (Golemanski 2011, Cornes 2005, Ganser 2013, Russo et al. 2005, Zeale et al. 2012).

Evaluation of the species in the zone

There are 725 to 1,146 individuals in the population in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of

natural habitats and species - Phase I' Project (MOEW 2022), 1 habitat of this species is established in the zone. The surface area of the potential habitats of the species in the zone is 36,270.35 ha., with 5,761.4 ha. being of high quality. According to the Specific Project Report, this species is in a favourable status in all respects except for the parameters Number of breeding colonies and Numbers in the breeding colonies, in respect of which its status is unfavourable - unsatisfactory because of lacking data (no breeding colonies have been registered), and the parameters Presence of old-growth trees and Quantity of dead wood in standing trees, in respect of which its status is unfavourable - unsatisfactory because of lacking data (these parameters have not been studied).

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the region under consideration includes potential habitats of this species along the Yuren Dere valley which will be directly affected. It was found during the field studies that Yuren Dere, where the future TMF will be situated by design, is occupied by cerris oak and downy oak forests which are natural habitat 91M0 Pannonian-Balkan Turkey Oak and Sessile Oak Forests over an area in the IP of 95,1278 ha. Many mother oak trees older than 200 years are present among these forests, with multiple hollows, loose bark, cracks, and deadwood (Figure V.1.1-8) covering 5-10 ha. and meeting the high-quality habitat conditions for this bat. It was found during the studies that sanitary and selective logging are carried out by the local forestry enterprise, resulting in the disappearance of many such mother trees and in deteriorating barbastelle habitats in Yuren Dere. The studies did not confirm the presence of this species but confirm the high quality of its habitat and the presence of such potential habitats.



Figure V.1.1-8: Mother trees The existing woodpecker holes are the ideal shelter for forest bats but a common dormouse (top, right) was found during the field work, which is typical of this forest habitat.

Impacts:

Direct habitat destruction

There are 22.1393 ha or 0.061% of the potential habitats of this species in the zone, according to MOEW data, but our mapping showed that the affected habitats of this species are within the range of natural habitat 91M0 Balkanic Turkey Oak and Sessile Oak Forests, or the affected potential habitat of this species will be 95.1278 ha or 0.26%. Potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of potential hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species, including a high-quality habitat (along the Byala Reka river valley and along the slope north of it). Fragmentation, including the impact on the parameter Connectivity of high-quality habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and our field studies, the area of maximum impact includes potential habitats of this species. Potential shelters are present. 92.1278 ha or 0.26% of the potential habitats of the species in the zone will be affected during construction and operation. Considering the small affected area on the one hand and the high habitat quality and mortality likelihood (see below) on the other hand, the impact including the impact on the parameters of Criterion 1, Population within the zone, is assessed as **medium**. Mitigation measures are required.

Mortality

Same as in the IP area, also the maximum impact boundary includes potential shelters in which the bats are more sensitive. There is a risk of mortality when cleaning up the TMF areas in Yuren Dere, depending on the period of the year during which this work is carried out. Individuals or entire colonies may die out, one reason being disturbance (see above). The impact, including on the parameters under Criterion 1. Population within the zone, is assessed as **medium**, given the comparatively low numbers of the species in the zone. Mitigation measures are required.

Measures:

Mine construction should begin outside the breeding period of the species (May 10 - July 30) and outside the wintering period (November 20 - March 10).

Phase: Construction.

Effect: Eliminating the risk of perishing of young/pregnant or wintering *Barbastella barbastellus* individuals.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1307 Lesser mouse-eared bat (*Myotis blythii*)

A common and frequently occurring species in Bulgaria. This species is known from around 130 habitats throughout Bulgaria, excluding the highest mountain parts. Most habitats are located between 100 and 800 m. a.s.l. This bat occurs in almost all karst and rocky areas in Bulgaria. It is of Asian origin and is evolutionary tolerant to dry, warm and open areas. It inhabits subterranean shelters - karst, volcanic and marine caves and mine shafts, throughout the year, and very rarely individuals are found in buildings. In many cases during both the winter and the summer, it inhabits the same shelters with its twin species *Myotis myotis*. The birthing maximum occurs between May 20 and June 10. No data about this species' trophic biology have been published in Bulgaria so far. It was found in Switzerland that more than 60% of its food comprises large bush crickets (Tettigoniidae) which it catches in open areas, pastures, often in freshly mowed meadows, and forest edges. In Bulgaria these bats perform seasonal migrations between winter and summer shelters between 50 and 80 km apart. Wintering in Bulgaria begins in late November and lasts until mid March. This bat is found in many caves during this period. Perhaps migration toward the breeding areas occurs after April 10-20 (MOEW 2022, Dietz & Kiefer 2016).

Evaluation of the species in the zone

There are 3,000 to 4,500 individuals in the population in the zone, according to the standard form. The species is designated as common (C). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), 11 habitats of this species are established in the zone. Its potential hunting habitats in the zone occupy 181,362.41 ha. According to the Specific Project Report, this species is in a favourable status in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, the region under consideration includes potential hunting habitats of this species that will be affected directly. No potential shelters are present. The nearest breeding colonies and wintering sites for this species in the region are the caves Aina ini (the Mirror cave) and Samara in the Ribino village, Krumovgrad Municipality, situated 33 km. away, and the Bat cave (Yarasa ini) in the Visoka polyana village, Kardjali Municipality, situated 40 km. away and used as a breeding colony (Petrov 2015).

Impacts:

Direct habitat destruction

103.4258 ha or 0.057% of the potential hunting habitats of the species in the zone are situated within the zone. No potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of suitable hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. Fragmentation, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no impact.** **There will be no impact** also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the area of maximum impact includes potential hunting habitats of this species. No potential shelters are present. The fact that the construction and mining operations will take place mainly during the light part of the day, while bats hunt at night, and the lack of shelters, mean that there will be no disturbance in the bats' hunting habitats. **There will be no impact.** **There will be no impact** also on the nature-conservation status parameters for this species.

Mortality

Same as in the IP area, also the maximum impact boundary does not include any potential shelters in which the bats are more sensitive. **There will be no mortality risk** in the hunting habitats as well because all activities will take place during the day and the bats are diurnal. **There will be no impact** on the population in the zone, including the parameters of Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1316 Long-fingered bat (*Myotis capaccinii*)

Long-fingered bats are typical inhabitants of karst regions. They occur throughout Bulgaria, and up to 1,500 m. in mountains, most of their habitats being located between 100 and 600 m. a.s.l. Their year-round shelters are subterranean - karst and volcanic caves, mine shafts and, by exception, humid cellars of unused buildings. This species forms breeding colonies of up to several thousand individuals (50 to 3,000, but most often 200-500, and always mixed with *Miniopterus schreibersii*). The birthing maximum occurs in May 20-25. The bats winter only in subterranean shelters. Long-fingered bats migrate regularly between their seasonal shelters which are 50 to 150 km. apart. Wintering in Bulgaria begins in late November and lasts until mid March. This bat is found in many caves during this period. Perhaps migration toward the breeding areas occurs after April 10-20. These bats hunt above water surface (slow flowing rivers with pools, rich in nutrients) and some animals hunt rarely in forests and shrubs away from water bodies. Their individual hunting areas vary between 0.3 and 10 ha (MOEW 2022, Almenar et al. 2006, Dietz & Kiefer 2016).

Evaluation of the species in the zone

There are 2000 - 3,500 breeding individuals in the zone and 11 - 50 individuals winter in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), 7 habitats of this species are established in the zone. An area of 65606.30 ha. Has been assessed as potentially suitable hunting habitats. According to the Specific Project Report, this species is in a favourable status in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the region under consideration includes potential hunting habitats of this species. No potential shelters are present. The nearest such shelter, a breeding colony 40 km. away, is the Bat cave (Yarasa ini) in the Visoka polyana village, Kardjali Municipality.

Impacts:

Direct habitat destruction

36.1268 ha or 0.055% of the potential hunting habitats of the species in the zone are situated within the zone. No potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of suitable hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. Fragmentation, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no impact.** **There will be no impact** also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and our field studies, the area of maximum impact includes potential hunting habitats of this species. No potential shelters are present. The fact that the construction and mining operations will take place mainly during the light part of the day, while bats hunt at night, and the lack of shelters, mean that there will be no disturbance in the bats' hunting habitats. **There will be no impact.** **There will be no impact** also on the nature-conservation status parameters for this species.

Mortality

Same as in the IP area, also the maximum impact boundary does not include any potential shelters in which the bats are more sensitive. **There will be no mortality risk** in the hunting habitats as well because all activities will take place during the day and the bats are diurnal. **There will be no impact** on the population in the zone, including the parameters of Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1310 Long-winged bat (*Miniopterus schreibersii*)

This species occurs throughout Bulgaria, except the highest mountain parts. Around 170 habitats are known, most of which at 100 to 600 m. a.s.l. It occurs in karst landscapes all over Bulgaria. Its year-round shelters are subterranean, such as caves and mine shafts. The species forms numerous breeding colonies. 19 such breeding colonies and 5 summer-time non-breeding colonies are known. The birthing maximum occurs between June 20 and July 10. The bats winter only in subterranean shelters. 14 winter shelters are known but more than 95% of the wintering population is located in three caves - Parnitsite, Devetashka, and Dyavolsko garlo. Long-winged bats migrate regularly between their seasonal shelters (50 to 150 km. apart). Their trophic habitats are predominantly river banks, lake shores and dam lake shores, all sorts of open habitats such as meadows and pastures, forest edges, urban areas (around street lamps), rarefied forests, and extensive arable areas, around 5 - 20 km. away from the shelters. These bats avoid closed-canopy dense forests. Their hunting territories are large, as high as thousands of hectares (Golemanski 2011, MOEW 2022, Rainho and Palmeirim 2011, Russo and Jones 2003, Vincent et al. 2011).

Evaluation of the species in the zone

There are 2000 - 3,500 breeding individuals in the zone and 250 - 500 individuals winter in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), 10 habitats of this species are established in the zone. Its potential hunting habitats in the zone occupy 65,831.39 ha. According to the Specific Project Report, the species status is favourable in all respects, except for the parameter 'Disturbance in habitats', assessed as unfavourable - status.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the region under consideration includes potential hunting habitats of this species. No potential shelters are present. The nearest such habitats are the caves Aina ini (the Mirror cave) and Samara, in the Ribino village, Krumovgrad Municipality, 33 km. away, the Bat cave (Yarasa ini) in the Visoka polyana village, Kardjali Municipality, 40 km. away and with a breeding colony, and abandoned water reservoirs of the mine in the town of Madjarovo, 26 km. away (Petrov 2015).

Impacts:

Direct habitat destruction

36.1268 ha or 0.055% of the potential hunting habitats of the species in the zone are situated within the zone. No potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of suitable hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. Fragmentation, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and our field studies, the area of maximum impact includes potential hunting habitats of this species. No potential shelters are present. The fact that the construction and mining operations will take place mainly during the light part of the day, while bats hunt at night, and the lack of shelters, mean that there will be no disturbance in the bats' hunting habitats. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Mortality

Same as in the IP area, also the maximum impact boundary does not include any potential shelters in which the bats are more sensitive. **There will be no mortality risk** in the hunting habitats as well because all activities will take place during the day and the bats are diurnal. **There will be no impact** on the population in the zone, including the parameters of Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1323 Bechstein's bat (*Myotis bechsteinii*)

The Bechstein's bat inhabits old, humid deciduous forests and mixed forests. It is known in 63 habitats in Bulgaria, and up to 2,500 m. a.s.l. in mountains. Most of its habitats is concentrated in the 0-300 m. height belt (24 habitats, 42%) and in the 301-600 m. height belt (12 habitats, 21%). The highest number of individuals were found in beech and mixed forest in the 800-1450 m. height belt. In Bulgaria this species prefers forests with prevalence of cerris oak (*Quercus cerris*), field ash (*Acer campestre*) and, less often, European hornbeam (*Carpinus betulus*) or oriental beech (*Fagus orientalis*) in the Strandja mountain are the preferred habitats, and low-land areas. This species is known as a sedentary species in Bulgaria and is not known as a seasonal migrant. Vertical migration for breeding and swarming in search of partners have been observed in the western Balkan range, in cave entrances or in abandoned mine shafts. Most often it is in late May and early June when females form small breeding colonies (5-35 females) in tree hollows, and give birth to one bat. Nursing continues for around 3 weeks, following which the young bats live with their parents until late August. Usually adult males live as single separate individuals in various shelters (most often in small holes in trees). Frequent change/alternation of shelters in the same forest area/section prior and following the breeding season is a characteristic feature of both sexes. It is a known fact that the females are strongly attached to their birth area and males are far more mobile and rarely remain in the region they were born in. Observations of the trophic behaviours in Bulgaria show that the species feeds close to its shelters (50-450 m., and very rarely further away). According to studies in other parts of the bat's range (Luxemburg, England), the feeding distance is 700 - 1,400 m. This bat hunts mainly in old deciduous forests, but also in coniferous forests. Its individual hunting section is small, at 0.6 - 0.7 ha., and often overlaps with the sections of other individuals from the same colony. This bat winters in caves and, sometimes, in its summer shelters (Golemanski 2011, MOEW 2022, Peshev et al. 2004, Dietz and Pir 2009, Fitzsimons et al. 2002, Fuszara et al. 1996, Napal et al. 2010, Schofield and Morris 2000).

Evaluation of the species in the zone

There are 973 to 1,947 individuals in the population in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), 4 habitats of this species are established in the zone. The surface area of the potential habitats of the species in the zone is 45,586.44 ha., with 6,153.9 ha. being of high quality. According to the Specific Project Report, this species is in a favourable status in all respects except for the parameters Number of breeding colonies and Numbers in the breeding colonies, in respect of which its status is unfavourable - unsatisfactory because of lacking data (no breeding colonies have been registered), and the parameters Connectivity of high quality habitats and Presence of old-growth trees, in respect of which its status is unfavourable - unsatisfactory because of lacking data with regard to the latter (this parameter has not been studied).

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the region under consideration includes potential habitats of this species along the Yuren Dere valley which will be directly affected. It was found during the field studies that Yuren Dere, where the future TMF will be situated by design, is occupied by cerris oak and downy oak forests which are natural habitat 91M0 Pannonian-Balkan Turkey Oak and Sessile Oak Forests over an area in the IP of 95,1278 ha. Many mother oak trees older than 200 years are present among these forests, with multiple

hollows, loose bark, cracks, and deadwood (Figure V.1.1-8) covering 5-10 ha. and meeting the high-quality habitat conditions for this bat. It was found during the studies that sanitary and selective logging are carried out by the local forestry enterprise, resulting in the disappearance of many such mother trees and in deteriorating long-eared bat habitats in Yuren Dere. The studies did not confirm the presence of this species but confirm the high quality of its habitat and the presence of such potential habitats.

Impacts:

Direct habitat destruction

There are 33.2807 ha or 0.073% of the potential habitats of this species in the zone, according to MOEW data, but our mapping showed that the affected habitats of this species are within the range of natural habitat 91M0 Balkanic Turkey Oak and Sessile Oak Forests, or the affected potential habitat of this species will be 95.1278 ha or 0.21%. Potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of potential hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species, including a high-quality habitat (along the Byala Reka river valley and along the slope north of it). Fragmentation, including the impact on the parameter Connectivity of high-quality habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and our field studies, the area of maximum impact includes potential habitats of this species. Potential shelters are present. 92.1278 ha or 0.21% of the potential habitats of the species in the zone will be affected during construction and operation. Considering the small affected area on the one hand and the high habitat quality and mortality likelihood (see below) on the other hand, the impact including the impact on the parameters of Criterion 1, Population within the zone, is assessed as **medium**. Mitigation measures are required.

Mortality

Same as in the IP area, also the maximum impact boundary includes potential shelters in which the bats are more sensitive. There is a risk of mortality when cleaning up the TMF areas in Yuren Dere, depending on the period of the year during which this work is carried out. Individuals or entire colonies may die out, one reason being disturbance (see above). The impact, including on the parameters under Criterion 1. Population within the zone, is assessed as **medium**, given the comparatively low numbers of the species in the zone. Mitigation measures are required.

Measures:

(see *Barbastella barbastellus*).

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1321 Geoffroy's bat (*Myotis emarginatus*)

73 locations around Bulgaria are known. Most of the shelters and colonies are situated in the low-mountain belt (up to 400 - 500 m. a.s.l.). Single individuals have been registered at heights of up to 1,600 m a.s.l. in the central Stara Planina mountain, 1,550 m. a.s.l. in the Rila mountain, and 1,560 m. a.s.l. in the Western Rhodopes. This bat is a typical inhabitant of low-mountain karst areas. This thermophilic species settles in caves, abandoned buildings, old military bunkers, etc. The temperature in the breeding shelters may reach 35°C. The breeding colonies form in May and comprise mainly female individuals, most often mixed with horseshoe bats. The young are born in June. Their earliest independent flights have been registered on July 20. In mid-August, shortly after all young can fly, the colony leaves the shelter and settles in another shelter near-by or further away. One of the longest migrations (105 km.) of this species has been recorded in Bulgaria between the Muselievo village, Nikopol area, and the Vodnite dupki cave in the Central Balkan. This bat feeds mainly on spiders, flies, lacewings and, less often, butterflies. It hunts in deciduous forests, including rarefied deciduous forests, parks, orchards, and shrubs. Sometimes it hunts over water bodies. It catches flies in animal farms. Only single individuals in caves have been found in winter in Bulgaria (Golemanski 2011, Dietz & Kiefer 2016).

Evaluation of the species in the zone

There are 6,000 to 10,000 individuals in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), 3 habitats of this species are established in the zone. Its potential hunting habitats in the zone occupy 122,389.19 ha. According to the Specific Project Report, this species is in a favourable status in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the region under consideration includes potential hunting habitats of this species. No potential shelters are present. The nearest breeding colony and wintering location of the species are abandoned water reservoirs of the ore mine near the town of Madjarovo 26 km. away .

Impacts:

Direct habitat destruction

94.9752 ha or 0.078% of the potential hunting habitats of the species in the zone are situated within the zone No potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of suitable hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential hunting habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a hunting habitat for the species. Fragmentation, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and our field studies, the area of maximum impact includes potential hunting habitats of this species. No potential shelters are present. The fact that the construction and mining operations will take place mainly during the light part of the day, while bats hunt at night, and the lack of shelters, mean that there will be no disturbance in the bats' hunting habitats. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Mortality

Same as in the IP area, also the maximum impact boundary does not include any potential shelters in which the bats are more sensitive. **There will be no mortality risk** in the hunting habitats as well because all activities will take place during the day and the bats are diurnal. **There will be no impact** on the population in the zone, including the parameters of Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1324 Large mouse-eared bat (*Myotis myotis*)

A common and frequently occurring species in Bulgaria. This species is known from more than 200 habitats throughout Bulgaria, excluding the highest mountain parts. Most habitats are located between 100 and 800 m. a.s.l. This bat occurs in all karst areas in Bulgaria. In most cases, it inhabits the same shelters with its twin-species, *Myotis blythii*. This bat's year-round shelters are subterranean, in karst, volcanic and marine caves, and mine shafts. The bat forms large breeding colonies numbering several hundreds to around 7,000 individuals. Often, these colonies include *M. blythii*. It has been found in Switzerland that more than 46% of its food comprises large carabid beetles (Carabidae). According to information from Western Europe, the large mouse-eared bat hunts most frequently in orchards and in deciduous forests and, less often, in mixed forests, vines, small arable fields, and spruce forests. Its trophic habitats are, most often, 2-6 km. and up to 15 km. away around the shelter. The females exhibit exceptionally high philopatry (natal homing), with more than 90% returning and breeding in the shelter they have been born in. They give birth between late May and early June. The birthing maximum occurs between May 20 and June 10. The young start flying 40 - 50 days later, and become independent in 2 months' time. It is likely that in Bulgaria these bats perform seasonal migrations between winter and summer shelters between 20 and around 100 km. Wintering in Bulgaria begins in late November and lasts until mid-March (MOEW 2022).

Evaluation of the species in the zone

There are 3,500 - 5,000 breeding individuals in the zone and 51 - 100 individuals winter in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), 10 habitats of this species are established in the zone. Its potential hunting habitats in the zone occupy 181,362.41 ha. According to the Specific Project Report, this species is in a favourable status in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, no potential hunting habitats of the species are situated in the region under consideration. No potential shelters are present. The nearest breeding colony and wintering site for this species in the region are the caves Aina ini (the Mirror cave) and Samara in the Ribino village, Krumovgrad Municipality, and the Bat cave (Yarasa ini) in the Visoka polyana village, Kardjali Municipality, situated 40 km. away and used as a breeding colony (Petrov 2015).

Impacts:

Direct habitat destruction

103.4258 ha or 0.057% of the potential hunting habitats of the species in the zone are situated within the zone. No potential shelters are present. Given the small affected area, the impact, including the impact on the parameter Area of suitable hunting habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential hunting habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a hunting habitat for the species. Fragmentation, including the impact on the parameter Area of suitable hunting habitats, will be **insignificant**.

Barrier effect

No barrier effect is expected because no activity or facility could obstruct the flight of individuals of the species. **There will be no impact.** **There will be no impact** also on the nature-conservation status parameters for this species.

Disturbance

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and our field studies, the area of maximum impact includes potential hunting habitats of this species. No potential shelters are present. The fact that the construction and mining operations will take place mainly during the light part of the day, while bats hunt at night, and the lack of shelters, mean that there will be no disturbance in the bats' hunting habitats. **There will be no impact.** **There will be no impact** also on the nature-conservation status parameters for this species.

Mortality

Same as in the IP area, also the maximum impact boundary does not include any potential shelters in which the bats are more sensitive. **There will be no mortality risk** in the hunting habitats as well because all activities will take place during the day and the bats are diurnal. **There will be no impact** on the population in the zone, including the parameters of Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1171 Southern crested newt (*Triturus karelinii*)

This species is widespread in most of Bulgaria, at heights of up to 1,300 m. a.s.l. (and higher, by exception). It is not present around the Danube and around the lower stretches of its tributaries, and has not been proven as present in North-western Bulgaria. This newt inhabits various water bodies with stagnant water - from large marshes and lakes to small puddles, wells, etc., and, as a rule, avoids flowing water (rivers, streams, etc.). During its terrestrial phase, it occurs in forests, shrubs, pastures and meadows with scattered brush and trees, etc., and adheres to moist areas. It feeds on various aquatic and terrestrial invertebrates. Its seasonal migrations are related to breeding and wintering. The breeding period begins immediately after snow melt and continues until the middle or end of spring. Fertilization occurs in the water and is preceded by specific mating games. The female lays eggs which it glues separately on underwater vegetation. Larvae hatch from the eggs and, having metamorphosed by the end of the summer, leave the water bodies. Many adult individuals leave the water bodies as early as the second half of the spring, but some remain in the water until the middle or end of summer. This newt can winter in the water and on dry land.

Evaluation of the species in the zone

No population numbers are present in the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), this species has been registered in 28 locations in the zone. The overall assessment of the nature conservation status this species is Unfavourable – unsatisfactory status. This is caused by the Unfavourable - Unsatisfactory Status according to parameters 3.2. Total fragmentation in the habitats of the species by linear facilities, 4.1. Fish stocking of water ponds, and 4.3 Drying up of water ponds. Based on inductive area modelling for individual habitat suitability classes, which are used as referent values, the classes in the zone are:

- 1) Missing (class 0): 7439,53 ha (3,42% of the total surface area of the zone);
- 2) Rare (class 1): 54135,04 ha (24,90%);
- 3) Suitable (class 2): 108123,24 ha (49,72%);
- 4) Optimal (class 3): 47749,07 ha (21,96%).

We have found from personal observations that the predominant habitats in the zone are of anthropogenic nature. Most are irrigation micro-dams not stocked with fish, and, less often, shallow wells. Usually, their main shortcoming is that they are situated in open dry areas without suitable conditions for life on dry land. The newt uses as its main resettling corridors the valleys of rivers and streams which provide them both with moisture and with shelter. Very often it spreads with transported aggregate, construction and soil materials, as well as fire wood etc.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) no habitat of this species is present in the studied area. This species was not found during our field studies. The traps placed in the two available water impoundments outside the target areas did not catch a single individual. However, these water bodies can be determined as suitable (Class 2). The studied area includes potential habitats of the terrestrial phase of this species, and these habitats will be affected directly. This is, mainly, the Yuren Dere valley with a total area of 8 ha. These habitats can be ascribed to Class 2 - Suitable. No optimal habitats will be affected. No water bodies suitable for this species are present. The arid nature of this region makes unlikely the finding of such species.

Impacts:

Direct habitat destruction

The studied area includes 8 ha., or 0.007%, of the Class 2 habitats suitable for the species in the No optimal habitats will be affected. No water bodies are present. Given the small percentage of the affected area, the impact, including the impact on the parameter Area of the potential hunting habitat, is assessed as **insignificant**.

Habitat fragmentation

There will be virtually no fragmentation, including impact on the parameter Total area of the potential habitat.

Barrier effect

The habitats for this species found in the IP zone possess the characteristics of a bio-corridor connecting to Arpa Dere, where there are optimal habitats, and there is a very high likelihood of occurrence of this species in the studied area. On the other hand, there are no optimal habitats in the studied area and the bio-corridor function is of little significance. There will be **insignificant** barrier effect, if any. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

This species is not sensitive toward disturbance. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

There is a little likelihood of presence of individuals in the concession area and of their mortality caused during construction of the mine. Since the concession area is far from aquatic habitats in and around which this species concentrates in larger numbers, and given the small affected area, there is a risk for single individuals. The impact on the population of this species in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1193 Yellow-bellied toad (*Bombina variegata*)

This toad occurs in mountains and sub-mountain areas in Bulgaria's western and central parts, up to 1,500 m. a.s.l. (and higher, in some cases). This toad has not been found in the Thracian plain valley and along the Black Sea coastline, with singular findings in the Danube Plain. The toad inhabits mountain brooks, small bogs, puddles, fountain troughs etc., but, as a rule, it is not present in large standing water bodies (dam lakes and water reservoirs) and in rivers. It rarely strays for more than a few meters from the water but may travel significant distances if the water bodies dry up or when the young toads resettle. Feeds on various small invertebrates. Unlike many other amphibians, its breeding period is highly stretched in time and can continue until the middle of the summer. The female lays the eggs separately or in small groups and usually attaches them to water plants or to the substrate. Winters on dry land.

Evaluation of the species in the zone

No population numbers are present in the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), this species has been registered in 127 locations in the zone. The overall assessment of the nature conservation status this species is Favourable status in the zone. The surface areas of its potential habitats, determined by inductive modelling, totals at 211725.51 ha.

- 1) Missing (class 0): 5721,46 ha (2,63% of the total surface area of the zone);
- 2) Rare (class 1): 62300,96 ha (28,65%);
- 3) Suitable (class 2): 111876,96 ha (51,45%);
- 4) Optimal (class 3): 37547,59 ha (17,27%).

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the optimal habitats (Class 3) for the species in the studied area cover 21,06 ha (0.056%). These habitats include the Yuren Dere valley and its tributaries. This is exactly where we found this species during the field studies. It is present in very low numbers. The valleys are relatively deep and sunless, which is the main reason for the low numbers. Yellow-bellied toads prefer lighted and warm water, which exists only in several locations in the studied area. It is our expert opinion that the optimal habitats determined by inductive modelling in the target area tend to be Class 2 - Suitable.

Impacts:

Direct habitat destruction

According to the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the affected area includes 14,6 ha, or 0.069% of the potential habitats of this species in the Given the small affected area, the impact,

including the impact on the parameter Area of the potential hunting habitat, is assessed as **insignificant**.

Habitat fragmentation

There will be virtually no fragmentation, including impact on the parameter Total area of the potential habitat.

Barrier effect

The habitats of the species found in the IP area exhibit the features of a bio-corridor connecting the studied area with Arpa Dere. The bio-corridor function is of little significance. The barrier effect will be **weak**. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

This species is not sensitive toward disturbance. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

It is difficult to determine the numbers of this species in the investment proposal area, but it is unlikely to exceed a few dozen individuals which will be destroyed during the mine construction. The impact on the population of this species in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1220 European pond turtle (*Emys orbicularis*)

This species occurs throughout the country and up to 1,100 m. a.s.l. It inhabits marshes, lakes, dam lakes, fish farms and other standing water bodies, as well as slow flowing rivers and channels. It stays around the shores of the water bodies and rarely strays away from the water. This turtle feeds on invertebrates and, less often, fish, frogs and their larvae, and sometimes eats plant food. Usually it lays eggs in June and may stray significantly from the water body for this purpose. The young hatch in September. The turtle overwinters on the bottom of water bodies and, rarely, on dry land.

Evaluation of the species in the zone

No population numbers are present in the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), this species has been registered in 29 locations in the zone. The overall assessment of the nature conservation status this species is Favourable. The surface areas of its potential habitats, determined by inductive modelling, totals at 82,938.88 ha.

- 1) Missing (class 0): 134508,01 ha (61,86% of the total surface area of the zone);
- 2) Rare (class 1): 67741,94 ha (31,15%);
- 3) Suitable (class 2): 13081,71 ha (6,02%);
- 4) Optimal (class 3): 2115,23 ha (0,97%).

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the habitats of this species in the studied area cover 59,85 ha (0.072%). The most suitable habitats extend over the upper stretch of Yuren Dere. We found during our field studies that the valleys with their low water, rocky bottoms and rocky shores rare to missing as habitats. Finding of individuals is possible but no conditions for constant habitation exist.

Impacts:

Direct habitat destruction

59.85 ha or 0.072% of the potential habitats of the species in the zone are situated in the zone. No optimal habitats will be affected. No water bodies are present. Given the low quality of terrains recognized as habitats of this species, the impact, including the impact on the parameter Area of the potential hunting habitat, is assessed as **insignificant**.

Habitat fragmentation

Fragmentation, including impact on the parameter Total area of the potential habitat, is **not observed**.

Barrier effect

There will be no barrier effect. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

This species is not sensitive toward disturbance. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

There is very little likelihood of presence of individuals in the concession area and of their mortality caused during construction of the mine because the concession area is far from any aquatic habitats in and around which this species would live. **There will be no** impact on the population of this species in the zone, including impact on the parameters under Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1222 Caspian terrapin (*Mauremys caspica*)

Occurs in Bulgaria's southernmost parts, usually below 250 m. a.s.l. It inhabits marshes, lakes, dam lakes, fish farms and other standing water bodies, as well as slow flowing rivers and channels. It stays around the shores of the water bodies and rarely strays away from the water. This turtle feeds on invertebrates and, less often, fish, frogs and their larvae, and sometimes eats plant food. Usually it lays eggs in June and may stray significantly from the water body for this purpose. It overwinters under water.

Evaluation of the species in the zone

No population numbers are present in the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), this species has been registered in 36 locations in the zone. The overall assessment of the nature conservation status this species is Favourable. The surface areas of its potential habitats, determined by inductive modelling, totals at 47537.12 ha.

- 1) Missing (class 0): 169909,77 ha (78,14% of the total surface area of the zone);
- 2) Rare (class 1): 31997,63 ha (14,72%);
- 3) Suitable (class 2): 11472,32 ha (5,28%);
- 4) Optimal (class 3): 4067,16 ha (1,87%).

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the habitats of this species in the studied area cover 37,2 ha (0.078%). The most suitable habitats extend over the upper stretch of Yuren Dere. We found during our field studies that the valleys with their low water, rocky bottoms and rocky shores rare to missing as habitats. Finding of individuals is possible but no conditions for constant habitation exist.

Impacts:

Direct habitat destruction

37.2 ha or 0.078% of the potential habitats of the species in the zone are situated within the concession. No water bodies are present. Given the low quality of terrains recognized as habitats of this species, the impact, including the impact on the parameter Area of the potential hunting habitat, is assessed as **insignificant**.

Habitat fragmentation

Fragmentation, including impact on the parameter Total area of the potential habitat, is **not observed**.

Barrier effect

There will be no barrier effect. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

This species is not sensitive toward disturbance. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

There is very little likelihood of presence of individuals in the concession area and of their mortality caused during construction of the mine because the concession area is far from any aquatic habitats in and around which this species would live. **There will be no** impact on the population of this species in the zone, including impact on the parameters under Criterion 1. Population within the zone.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1219 Spur-thighed tortoise (*Testudo graeca*)

Present throughout Bulgaria at heights up to 1,300 m. a.s.l., except for North-western Bulgaria and the high fields (and surrounding mountains) of Western Bulgaria. Almost completely extinct in the Thracian plain valley and in many parts of the Danube Plain as a result of intensive agriculture. The species inhabits both open spaces with scattered tree and scrub vegetation, as well as rarefied forests and thickets. It is active almost through the entire day in spring and autumn, and only in the morning and evening in the summer. Seasonal migrations are observed in many places toward forested areas early in the summer and toward open areas by the summer's end. The tortoise feeds on grassy plants and, less often, on fallen fruits etc. Usually copulation occurs in April and the first half of May. The eggs are laid in early summer, and the young hatch by the end of the summer or early in the autumn.

Evaluation of the species in the zone

No population numbers are present in the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), this species has been registered in 390 locations in the zone. The overall assessment of the nature conservation status this species is Unfavourable - unsatisfactory status. This is caused by the Unfavourable - Unsatisfactory Status according to parameters 3.2. Total fragmentation in the habitats of the species by linear facilities, and 4.5. Poaching and gathering. The surface areas of its potential habitats, determined by inductive modelling, totals at 200517.24 ha.

- 1) Missing (class 0): 16929,65 ha (7,79% of the total surface area of the zone);
- 2) Rare (class 1): 64350,29 ha (29,59%);
- 3) Suitable (class 2): 109357,78 ha (50,29%);
- 4) Optimal (class 3): 26815,17 ha (12,33%).

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, the region under consideration includes potential habitats of this species that will be affected directly. According to the adopted model for the above project, no optimal habitats will be affected. According to field studies with mapping, the optimal habitats for this species are all terrains with pubescent oak (*Q. pubescens*), and many of the areas occupied by cerris oak (*Q. cerris*) along the Yuren Dere valley. The evaluation of the forest-management activities envisioned for 2019 (<https://gis.wwf.bg>) shows that this area in the pine tree plantations and in the cerris oak forests will increase. Based on our preliminary studies and calculations and on our experience of the region, we believe that this species numbers approximately 500 ± 100 individuals in the target area. The animals concentrate mainly in the optimal habitats along Yuren dere, where around 70% of the individuals reside.

Impacts:

Direct habitat destruction

144.66 ha or 0.072% of the potential habitats of the species in the zone are situated within the concession. On the other hand, the surface area of the potential habitats is a significant percentage of the IP area. The potential habitats are actively occupied by representatives of this species. Considering the small percentage of affected area, the impact in the zone (Rhodopes - Eastern) is, according to the accepted assessment of the Favourable Conservation Status, **insignificant**. The impact on the parameter Total area of the potential habitat is also assessed as **insignificant**.

Habitat fragmentation

Since the IP zone is surrounded closely by potential habitats of this species, there will be **no** fragmentation to speak of. **There will be no** additional impact on the parameter Total area of the potential habitat.

Barrier effect

The IP will affect a part of a larger polygon with potential habitats of this species. No habitats that could perform as bio-corridors will be affected. The IP territory is 2,400 m. long which makes it a difficult obstacle for the tortoises. There will be **insignificant** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

This species is not sensitive toward disturbance. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

Perhaps 500 ± 100 individuals reside in the IP area. Spur-thighed tortoises are slowly moving species with relatively limited personal territories, making them very vulnerable during area utilization. Failure to consider tortoises in the mine construction design will also threaten direct destruction of 'non-resident' individuals of which there are around 30%. These are individuals who do not reside permanently in the area but spend short periods of time there or simply pass through. Given the high numbers of this population in the zone, the impact, including the impact in respect of the parameters under Criterion 1. Population within the zone, may be **medium**. Achieving of insignificant impact requires application of measures (item VI) which ensure removing of the individuals prior to utilizing the areas and preventing them from returning.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1217 Hermann's tortoise (*Testudo hermanni*)

Present throughout Bulgaria at heights up to 1,400 m. a.s.l., except for the Dobrudja area and the high fields (and surrounding mountains) of Western Bulgaria. Almost completely extinct in the Thracian pan valley and in many parts of the Danube Plain as a result of intensive agriculture. This species inhabits deciduous forests, scrubs, pastures and meadows with scattered trees and shrub etc. It is most numerous in rarefied oak forests in hilly and low-mountain regions. It is active almost through the entire day in spring and autumn, and only in the morning and evening in the summer. It feeds on grassy plants and, rarely, on fallen fruits etc. Its young hatch by the end of the summer or in the autumn, and sometimes autumn hatchlings do not leave the 'nest' where they spend the winter.

Evaluation of the species in the zone

No population numbers are present in the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), this species has been registered in 1008 locations in the zone. The overall assessment of the nature conservation status this species is Unfavourable - unsatisfactory status. This is caused by the Unfavourable - Unsatisfactory Status according to parameters 3.2. Total fragmentation in the habitats of the species by linear facilities, and 4.5. Intensity of fires. The surface areas of its potential habitats, determined by inductive modelling, totals at 208876.99 ha.

- 1) Missing (class 0): 8569,89 ha (3,94% of the total surface area of the zone);
- 2) Rare (class 1): 13194,66 ha (6,07%);
- 3) Suitable (class 2): 134164,32 ha (61,70%);
- 4) Optimal (class 3): 61518,01 ha (28,29%).

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, the region under consideration includes potential habitats of this species that will be affected directly. According to the adopted model for the above project, 32.21 ha. of optimal habitats (0.052% of this category) will be affected. According to field studies with mapping, the optimal habitats for this species are all terrains with pubescent oak (*Q. pubescens*), and many of the areas occupied by cerris oak (*Q. cerris*) along the Yuren Dere valley. The evaluation of the forest-management activities envisioned for 2019 (<https://gis.wwf.bg>) shows that this area in the pine tree plantations and in the cerris oak forests will increase. Based on our preliminary studies and calculations and on our experience of the region, we believe that this species numbers approximately 600 ± 150 individuals in the target area. The animals concentrate mainly in the optimal habitats along Yuren dere, where more than 70% of the individuals reside.

Impacts:

Direct habitat destruction

146.58 ha or 0.070% of the potential hunting habitats of the species in the zone are situated within the concession On the other hand, the surface are of the potential habitats is 100% of the IP area. The potential habitats are actively occupied by representatives of this species. Considering the small percentage of affected area, the impact in the zone (Rhodopes - Eastern) is, according to the accepted assessment of the Favourable Conservation Status, **insignificant**. The impact on the parameter Total area of the potential habitat is also assessed as **insignificant**.

Habitat fragmentation

Since the IP zone is surrounded closely by potential habitats of this species, there will be **no** fragmentation to speak of. **There will be no** additional impact on the parameter Total area of the potential habitat.

Barrier effect

The IP will affect a part of a larger polygon with potential habitats of this species. No habitats that could perform as bio-corridors will be affected. The IP territory is 2,400 m. long which makes it a difficult obstacle for the tortoises. There will be **insignificant** barrier effect. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

This species is not sensitive toward disturbance. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

600 ± 150 individuals reside in the IP area. Spur-thighed tortoises are slowly moving species with relatively limited personal territories, making them very vulnerable during area utilization. Failure to consider tortoises in the mine construction design will also threaten direct destruction of 'non-resident' individuals of which there are around 30%. These are individuals who do not reside permanently in the area but spend short periods of time there or simply pass through. Given the high numbers of this population in the zone, the impact, including the impact in respect of the parameters under Criterion 1. Population within the zone, may be **medium**. Achieving of insignificant impact requires application of measures (item VI) which ensure removing of the individuals prior to utilizing the areas and preventing them from returning.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

5194 Dione's snake (*Elaphe sauromates*)

Occurs in plains and mountain lowlands in Southern Bulgaria (east of Pazardjik), the Black Sea coastline, the Danube Plain, the eastern part of the northern Balkan area, and Dobrudja. Occupies open areas with steppe vegetation, rarefied deciduous forests and thickets. Sometimes it occurs in very humid locations along the banks of large rivers and marshes. Feeds on rodents, shrews, small birds and eggs and, by exception, lizards. Hunts in rodent holes or on the surface and frequently climbs trees. It strangles its prey by wrapping itself around it. Its breeding in Bulgaria has not been researched. In the eastern parts of its range this species copulates in May and lays eggs in June-July. Its young hatch in late summer. Sexual maturity occurs during the third or fourth year.

Evaluation of the species in the zone

No population numbers are present in the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), this species has been registered in 390 locations with one individual in the zone. The overall assessment of the nature conservation status this species is Unfavourable - unsatisfactory status. This is caused by the Unfavourable - Unsatisfactory Status according to parameters 3.2. Total fragmentation in the habitats of the species by linear facilities, and 4.5. Poaching and gathering. The surface areas of its potential habitats, determined by inductive modelling, totals at 181453.27 ha.

- 1) Missing (class 0): 35993,62 ha (16,55% of the total surface area of the zone);
- 2) Rare (class 1): 94227,47 ha (43,33%);
- 3) Suitable (class 2): 68864,27 ha (31,67%);
- 4) Optimal (class 3): 18361,52 ha (8,44%).

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) and to our field studies, the region

under consideration includes potential habitats of this species that will be affected directly. According to the adopted model for the above project, 142.39 ha. of predominantly rare (class 1) habitats will be affected, with the optimal habitats in this number being 0.57 ha (0.0003% of this category). According to field studies with mapping, the optimal habitats for this species are all terrains with pubescent oak (*Q. pubescens*), and a very small part of the areas occupied by cerris oak (*Q. cerris*) along the Yuren Dere valley. Bare areas with deep shelters are particularly valuable. The absence of human activities in these areas is also a prerequisite for presence of individuals of this species. The remaining areas are defined as rare (class 1), where this species is most likely completely absent. This species has become exceptionally rare in Bulgaria during the past decades, with the exception of several locations. It was not found in the target area during our field studies. However, we should assume its presence in the optimal habitats because there are some locations within a 20 km. perimeter around the IP area where it is present.

Impacts:

Direct habitat destruction

142.39 ha or 0.079% of the potential hunting habitats of the species in the zone are situated within the concession. On the other hand, the surface area of the potential habitats is a significant percentage of the IP area. Considering the small percentage of affected area, the impact in the zone (Rhodopes - Eastern) is, according to the accepted assessment of the Favourable Conservation Status, **insignificant**. The impact on the parameter Total area of the potential habitat is also assessed as **insignificant**.

Habitat fragmentation

Although of low category, potential habitats of this species exist all around the IP area. **There will be no** fragmentation. **There will be no** additional impact on the parameter Total area of the potential habitat.

Barrier effect

Usually, mine sites are surmountable by snakes, despite the high risk during the transition. **There will be no** barrier effect. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Amphibians and reptiles are not highly sensitive to disturbances posed by the IP, especially during routine operation. The impact is assessed as **insignificant**. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

The presence of individuals within the IP boundaries is likely with mortality risks existing for the young and/or the eggs of the species, provided that construction should begin during the breeding period, and for the adults if it is carried out during the wintering period. The Dione's snake is a large, easily seen and not very fast snake, and because of this it often is directly destroyed by people. Since this species is very rare, any mortality means that the impact on its population in the zone, including on the parameters under Criterion 1. Population within the zone, may be **significant**. Achieving of insignificant impact requires application of measures (item VI) which ensure removing of the individuals prior to utilizing the areas.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

Fish

According to the Standard form, 5 fish species are subject to protection in the zone - asp (*Aspius aspius*), Amur bitterling (*Rhodeus amarus*), golden spined loach (*Sabanejewia aurata*), spined loach (*Cobitis taenia*) and Italian barbel (*Barbus cyclolepis*). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the studied area includes potential habitats of the latter 4 species, in Yuren Dere, which will be impacted directly. We found during our field studies that there is a substantial drop in water levels in Yuren Dere during the hot summer months, when no Ichthyofauna is present. Only Arpa Dere can be considered a fish habitat, mainly in respect of the two barbel species and the Italian barbel, with the spined loach and the Italian barbel having been found there during the field studies. According to the Specific Project Report, the status of two of these species – the Amur bitterling (*Rhodeus amarus*) and the spined loach, is favourable in respect of all parameters, while the status of the golden spined loach (*Sabanejewia aurata*) is unfavourable – unsatisfactory in respect of the parameters Flow velocity and River bed modification. The Italian barbel (*Barbus cyclolepis*) has not been evaluated.

Impacts:

Direct habitat destruction

The IP will have no direct effect on any fish habitats. **There will be no** impact, including on the parameters of Criterion 2. Area of the habitats within the zone.

Habitat fragmentation

The IP will have no direct effect on any fish habitats. **There will be no** fragmentation, including impact on the parameters of Criterion 2. Area of the habitats within the zone and of Criterion 3. Structures and functions.

Barrier effect

The IP will not affect directly any fish habitats, including habitats functioning as bio-corridors. **There will be no** impact, including on the parameters of Criterion 2. Structures and functions.

Disturbance

Fish are not sensitive to disturbance. **There will be no** impact, including on the parameters of Criterion 1. Population within the zone.

Mortality

The IP will have no direct effect on any fish habitats. However, construction may cause increased turbidity of the water in Yuren Dere which may, when high, reach Arpa Dere. This may result in mortality of individuals in unforeseeable numbers but given the small flow-rates of both Yuren Dere and Arpa Dere, this mortality may be considered **insignificant**. The impact on the parameters of Criterion 1. Population within the zone of affected species will also be **insignificant**. Adequate measures can **eliminate** this impact.

Measures:

During construction, the Yuren Dere flow should be protected against increased turbidity by installing of the so called turbidity curtains or employing adequate construction processes.

Phase: Construction.

Effect: The fish mortality risk, including fish which is subject of protection in the protected zone, is eliminated.

There will be no impact on the remaining nature-conservation status parameters for the fish species which are the subject of protection in the protected zone.

1032 Thick shelled river mussel (*Unio crassus* Philipsson in Retzius, 1788)

Inhabits mainly the lower stretches of rivers and some almost stagnant water bodies. Prefers rivers and streams with clean flowing water, high oxygen content and sandy-gravelly bottoms. Endobiotic filtrator, psamo-pelo-argiophile (sandy-silty-clayey bottom). Usually the individuals are sexually dimorphic (in rivers and in large lakes), but the populations isolated in oxbows and in other smaller stagnant water impoundments comprise hermaphrodite forms. The mussels reach sexual maturity after the third year. Up to 130,000 eggs develop on their gills. This development is metamorphous - a parasitic glochidium larva attaching itself to various fish species. In Bulgaria the eggs are fertilized between late April and June, and the glochidia in the mussels mature and are expelled into the water until August. The eggs and glochidia remain in fish gills for 20 to 40 days. (Zingstra et al. 2009, Trichkova 2013, Van Damme 2011).

Evaluation of the species in the zone

There are 49,425,850 individuals in the zone, according to the standard form. The species is designated as rare (R). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), this species has been found in 2 locations in the zone. The average abundance of this species in the zone is 1.15 individuals/m² ($Ab = 1.15 \pm 3.15$). Its potential habitats in the protected zone occupy 4,297.9 ha. According to the Specific Project Report, the status of this species is unfavourable – unsatisfactory in respect of the parameters Water quantities, Nature of the bottom substrate, Pollution and Anthropogenic presence along the banks (camping, tourism and fishing). Its status is favourable in respect of the remaining parameters.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the Yuren Dere and its receiving river Arpa Dere are potential habitats for this species. The location where this species is actually present closest to the IP is the Byuala Reka River near the Meden buk village (Trichkova 2013). This makes expansion of this species upstream and up Arpa Dere, but this mussel was not found during the field studies. We found during our field studies that there is a substantial drop in water levels in the inherently low-flow Yuren Dere during the hot summer months, which makes it, in our opinion, unsuitable for as a habitat for this species. This is suggested also by the absence of fish and by the stony bottom. Only Arpa Dere can be regarded as a habitat for this species.

Impacts:

Direct habitat destruction

No potential habitats of this species are present in the IP area. There will be no direct impacts on the habitats of this species. Some indirect impact is possible if the Yuren Dere water is retained in the TMF bowl and resulting in reduced water quantity in Arpa Dere. No information is available about the strength of this impact, but if it is present, it may affect 7.88 ha, or 0.18% of the potential habitats of this species in the zone (as far as the entry of Arpa Dere into the Byala Reka River). The impact, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Habitat fragmentation

The IP will have no direct effect on any habitats of this species. **There will be no** fragmentation, including impacts on the parameter Total area of potential habitats.

Barrier effect

The IP will not affect directly any habitats of this species, including habitats functioning as bio-corridors. As the main barriers before any wider spreading of this species in the zone are the rivers which dry up during the summer months, reducing the quantity of water in Arpa Dere may isolate the potential population inhabiting the stretch upstream of the point of entry of Yuren Dere. Since the upper stretch of Arpa Dere and its tributaries are most likely shallow and drying during the summer, the numbers of this population would be very low, if it exists at all. Therefore, the barrier effect of lowering the water level in Arpa Dere is assessed as **insignificant**. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

No potential habitats of this species are present in the IP area. However, an indirect impact is possible if the Yuren Dere water is retained in the TMF bowl and resulting in reduced water quantity in Arpa Dere. No information is available about the strength of this impact, but if Arpa Dere should dry up in this manner, this may impact around 90,000 individuals or 0.18% of the population of the species in the zone. The impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1093 Stone crayfish (*Austropotamobius torrentium* Schrank, 1803)

A central European and south-European astacid crayfish, around 10 cm long (occasionally 12 cm), with a smooth carapace and short, obtuse triangular rostrum. Occurs predominantly in smaller mountain rivers and streams and in the upper and middle stretches of larger rivers. Very rarely found in stagnant water bodies with clean water. Prefers sections with stony bottoms and convenient hiding places along the banks (riparian tree roots). It has been found at elevations between 180 and 1,600-1,700 m. a.s.l., and predominantly in the zone between 400 and 900 m. Occurs mainly in South-Eastern Bulgaria (Todorov 2013).

Evaluation of the species in the zone

This species is indicated as rare (R) in the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), this species has not been found in the Eastern Rhodopes. *Austropotamobius torrentium* has been displaced in most of its potential habitats by its competitor species *Potamon ibericum* (a potamid crayfish). Its potential habitats in the protected zone occupy 1,028.4 ha. According to the Specific Project Report, the status of this species is favourable in respect of the parameters Total area of the potential habitats, Use of insecticides in forestry and agriculture, and Construction of water engineering facilities, changing the banks. Its status is unfavourable – unsatisfactory in respect of the remaining parameters.

Evaluation of the species in the studied region

No occupied habitats of this species in the IP have been found, but the lower stretches of Yuren Dere and Arpa Dere are its potential habitats. The upper stretch is dry during most of the year.

Impacts:

Direct habitat destruction

According to the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), 1,13 ha, or 0.11% of the potential habitats of this species the zone will be affected by the IP implementation. It was found during our studies that the upper part of Yuren Dere is dry most of the year and is unsuitable for the species. 0.238 ha or 0.023% of the potential habitats of the species in the zone will be directly impacted. An indirect impact is possible if the Yuren Dere water is retained in the TMF bowl and resulting in reduced water quantity in Arpa Dere. No information is available about the strength of this impact, but if it is present, it may affect 1.18 ha, or 0.115% of the potential habitats of this species in the zone. Given the small affected surface area (by both direct destruction and damage), the impact on the habitats at the Zone level, including the parameter Total area of the potential habitats, will be **insignificant**.

Habitat fragmentation

The IP will affect directly the potential habitats of this species along the Yuren Dere river, but these will be peripheral parts of a polygon with potential habitats of this species. The impact, including on the parameter Total area of the potential habitat, **will be insignificant**.

Barrier effect

As the main barriers before any wider spreading of this species in the zone are the rivers which dry up during the summer months, reducing the quantity of water in Arpa Dere may isolate the potential population inhabiting the stretch upstream of the point of entry of Yuren Dere. Since the upper stretch of Arpa Dere and its tributaries are most likely shallow and drying during the summer, the numbers of this population would be very low, if it exists at all. Therefore, the barrier effect of lowering the water level in Arpa Dere is assessed as **insignificant**. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

Although the species was not found, the existence of potential habitats means that its presence within the IP boundaries cannot be ruled out. An indirect impact is possible if the Yuren Dere water is retained in the TMF bowl and resulting in reduced water quantity in Arpa Dere. No information about the degree of this impact are available at this stage. In view of the probable low population of in the area and the sub-optimal nature of the directly impacted habitats (intermittent flow), the impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

4045 Ornate bluet (*Coenagrion ornatum* Selys, 1850)

An eastern-Mediterranean species dispersed throughout Bulgaria, in spots in isolated locations in elevations between the sea level and 950 m. a.s.l. It prefers well lighted standing-water or slow-flowing water bodies with banks overgrown with mesophytic vegetation, usually

not wider than 2 m. and not deeper than 1 m., as well as the areas frequently flooded by rivers. A rare limnophilic species adhering to the mesophytic vegetation along water bodies, where its larva usually resides. Its larvae develop on the underwater part of plants such as lesser water-parsnip (*Berula erecta*), yellow iris (*Iris pseudocorus*), branched bur-reed (*Sparganium erectum*) etc. The males fly low over short distances. Active between April - May and mid-August, with only solitary individuals being observed after May and June (Langurov 2013).

Evaluation of the species in the zone

This species is indicated as rare (R) in the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), this species has been found in one location in the zone. The damaged territories in its potential habitats means that the nature conservation status of this species was assessed as unfavourable-unsatisfactory. Its potential habitats in the protected zone occupy 8,140.36 ha. (4% of the PA area). According to the Specific Project Report, the status of this species is favourable in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), no potential habitats of this species exist in the studied area. The nearest actually registered location was found approximately 10 km. to the north of the IP, near the Glumovo village (Marinov 2003).

Impacts:

No actual and potential habitats of this species are present in the studied area. The IP will **have no impact** on the habitats and populations of this species in the zone and on its nature conservation status.

4053 Balakn pincer grasshopper (*Paracaloptenus caloptenoides* (Brunner von Wattenwyl, 1861))

A Pont-Mediterranean species of scattered distribution even in the centre of its range. Occurs in fragments throughout the Bulgaria, between the Black Sea Coastline and up to 2,000 m. a.s.l. Population split by height and habitat in Western and Eastern Bulgaria is typical of this species. In the western parts of Bulgaria (from the Western Stara Planina mountain to the south and south-east to, and including, the Middle Rhodopes) this species inhabits the hilly and mountain belt above 800-900 m., with its lower distribution line rising up to around 1,300 m. in the Slavyanka mountain and 1,600 m in the Belasitsa mountain. This species is a representative of the pincer short-horned grasshoppers, a wingless soil dweller. A rare species inhabiting natural dry grass terrains, rocky slopes with low vegetation, forest edges and areas with rare vegetation, karst terrains and agrocenose ecotones. It is typical of sub-Panonian steppe habitats, semi-natural dry grass habitats and shrubland on calcareous substrate, making them habitats of European importance. The adults emerge during the summer. They remain on the ground, especially in the bases of rubble and stone heaps, and hide in near-by vegetation. It feeds on dicotyledonous grassy plants (Zingstra et al. 2009, Hochkirch et al. 2016).

Evaluation of the species in the zone

This species is common (C) in the zone, according to the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), 15 habitats of this species are established in the zone. Its averages at 89 individuals / 1 transect (along 14 transects with a total area of 1.70 ha.). Its potential habitats in the zone cover 112,625.13 ha. According to the Specific Project Report, the species status is favourable in all respects, except for some parameters of Criterion 4. Future prospects, in respect of which it is unfavourable - unsatisfactory.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), almost 90% of the studied area is a potential habitat for this species. It was found during our field studies that oak forests and most of the coniferous forests have been designated as potential habitats. Habitats such as these are not suitable for the species. The nearest locations are around the Hambardere river between the villages of Byalgradets and Kazak (Figure V.1.1-11), and several locations near the villages of Zhelezari and Plevun. The only potential habitats for this species in the studied area are the grassy and shrub communities in its northern part (natural habitats 6210 and 5210).

Impacts:

Direct habitat destruction

2.43 ha or 0.002% of the potential habitats of the species in the zone are situated within the boundaries of direct impact. Given the small affected area, the impact, including the impact on the parameter Area of the potential habitats, is assessed as **insignificant**.



Figure V.1.1-11: Characteristics of the location of this species near the Kazak village.

Habitat fragmentation

The direct impact boundaries include a portion of a polygon of potential habitats for the species (0.1 ha.), and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 2.53 ha. or 0.002% of the potential habitats of the species in the area. Fragmentation, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Barrier effect

This species is sedentary and does not migrate far outside its habitats. Furthermore, the IP will affect a small polygon with potential habitats of this species in the periphery of an enormous area of unsuitable forest habitats. **There will be no** barrier effect. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

2.43 ha of the potential habitats of the species are situated within the boundaries of direct impact. Although the species was not found, the existence of potential habitats means that its presence within the IP boundaries cannot be ruled out. Mortality of individuals may be possible during the construction, grubbing and shrub removal. Collision with motor vehicles may cause mortality of adults. The small surface area of the affected habitats and the low speed of transport, construction and mining plant creates risks for single individuals. The impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will, if any, be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1060 Large copper (*Lycaena dispar* ([Haworth], 1802))

A relatively small diurnal butterfly dispersed throughout the temperate zone of Europe and Asia. It is present in localised spots almost everywhere in Bulgaria, in open moist and, less often, dry grassy areas along lakes, ditches, gutters and other sources of moisture, up to 1,000 m. a.s.l. (around the town of Koprivshtitsa) in mountains, and along banks with its food plants – *Rumex hydrolapathum*, *R. crispus*, *R. aquaticus*. Its caterpillar feeds mainly on the green leaves of polygonaceae plants. The butterflies fly between May and October. There are two to three generations, between May and August, depending on the altitude (Beshkov 2014, Zingstra et al. 2009, Tolman & Lewington 1997).

Evaluation of the species in the zone

This species is indicated as very rare (V) in the standard form. According to data from the ‘Mapping and determining the nature conservation status of natural habitats and species – Phase I’ Project (MOEW 2022), no habitats of this species are established in the zone. Its potential habitats occupy 20,038.25 ha. According to the Specific Project Report, the status of this species is favourable in all respects.

Evaluation of the species in the studied region

According to data from the ‘Mapping and determining the nature conservation status of natural habitats and species – Phase I’ Project (MOEW 2022) several potential habitats of this species are situated in the studied area - along the Arpa Dere, Yuren Dere and Korakrja Dere valleys, and, also, near the Rozino village, and 2 of these habitats will be impacted directly. We are of the opinion that all the polygons in the studied area are sub-optimal because the banks of the streams in the valleys are forested, steep, without hydrophytic vegetation along the banks, and the grassy areas around Rozino village are predominantly dry. Furthermore, the two polygons in the IP boundary are occupied by forest habitats - xerophytic formations of pubescent oak, which are unsuitable for this species.

Impacts:

No actual and potential habitats of this species are present in the studied area. The IP will **have no impact** on the habitats and populations of this species in the zone and on its nature conservation status.

1065 Marsh fritillary (*Euphydryas aurinia* (Rottemburg, 1775))

A large and beautiful diurnal butterfly disseminated throughout Europe, Turkey, and the temperate belt of Asia as far as Korea (Beshkov 2014). Its populations in Bulgaria are small and localised in various parts between the sea coastline and the high mountain parts (up to 2,100 m. a.s.l.). It inhabits grassy meadows and fields in forests and forest outskirts, as well as meadows with shrubs and single trees. It produces one generation between April and July according to the elevation, the geographic location and the year. The caterpillars feed on devil's-bit scabious (*Succisa pratensis*), pincussion flower (*Scabiosa* sp.), yellow gentian (*Gentiana lutea*) and common honeysuckle (*Lonicera periclymenum*) (Tolman & Lewington 1997).

Evaluation of the species in the zone

There are 26551 to 52864 individuals in the zone, according to the standard form. The species is designated as common (C). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), no habitats of this species are established in the zone. Finding in the Eastern Rhodopes has been reported from Studen kladenets village, Dolno cherkovishte village, Borislavtsi village, the Ivaylovgrad dam lake, and the Arda chalet near Dabovets village (Abadjiev 1995, Абаджиев и Бешков 2007). Its potential habitats in the zone cover 30229.2 ha. According to the Specific Project Report, the status of this species is favourable in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), the studied area includes several polygons with potential habitats of this species. It was found during the field studies that the meadows mapped by us in forest associations can also be accepted as potential habitats for the species.

Impacts:

Direct habitat destruction

3.33 ha or 0.01% of the potential habitats of the species in the zone are situated within the zone. Given the small affected area, the area-level impact, including the impact on the parameter Total area of the potential habitats, is assessed as **insignificant**.

Habitat fragmentation

There are 3 polygons with potential habitats of the species within the boundaries of direct impact. The remaining portion of these habitats will retain their features of habitat for this species which inhabits also small forest meadows. Fragmentation, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Barrier effect

The nature of the IP does not suggest a barrier effect for the imago because of the latter's mobility, being a flying insect. The larvae (caterpillars) move over comparatively small areas within the suitable habitats. **There will be no barrier effect. There will be no impact** also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no impact. There will be no impact** also on the nature-conservation status parameters for this species.

Mortality

Although the species was not found, the existence of potential habitats means that its presence within the IP boundaries cannot be ruled out. Mortality of individuals may be possible during the construction, grubbing and shrub removal. Collision with motor vehicles may cause mortality of adults. The small surface area of the affected habitats and the low speed of transport, construction and mining plant creates risks for single individuals. The impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

6199 Four point sword butterfly (*Euplagia quadripunctaria* (Poda, 1761))

A large and beautiful nocturnal butterfly (50-62 mm with spread wings) occurring in Europe and in Southwestern Asia. It occurs in the lowest parts of Bulgaria, including the Black Sea coastline, and up to around 1,900 m. a.s.l. in the mountains, mainly in warm and overgrown sunlit slopes and in all hazel tree areas. This butterfly is attached to deciduous, mainly oak forests and shrubland habitats. It is known in Bulgaria for its many locations throughout the country. This species produces one generation per year with the imago starting to fly in June - September. It feeds day and night, in shady places near shrubs and in areas surrounding forests. The larvae are polyphagous, feeding on dandelions (*Taraxacum*), dead nettle (*Lamium*), honeysuckle (*Lonicera*), nettle (*Urtica*), raspberry (*Rubus idaeus*), and hazel (*Corylus*). This species is regarded in Europe as a paramigrant, performing serious migrations. (Zingstra et al. 2009, Bekchiev et al. 2017).

Evaluation of the species in the zone

There are 326977 to 625794 individuals in the zone, according to the standard form. The species is designated as common (C). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), this species has been found in a number of locations in the zone. Its potential habitats in the zone cover 149,408.52 ha. (86.7% of the zone). According to the Specific Project Report, the status of this species is favourable in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022) and to our field studies, the majority of the IP includes potential habitats of this species. During our field studies we found a local population of *Euplagia quadripunctaria* within the IP area.

Impacts:

Direct habitat destruction

Also, some actual and potential habitats of this species are present in the IP area. IP implementation will cause the loss of 97.59 ha or 0.065% of the potential habitats of the species in the zone are situated within the zone. Given the small affected area, the impact, including the impact on the parameter Area of the potential habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a large polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. Fragmentation, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Barrier effect

The nature of the IP does not suggest a barrier effect for the imago because of the latter's mobility, being a flying insect. The larvae (caterpillars) move over comparatively small areas within the suitable habitats. Barrier effect is possible but will be **insignificant**. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

The species inhabits some locations in the IP and the likelihood of individuals being present during the activities in the IP area cannot be ruled out. Mortality of individuals may be possible during the construction, grubbing and shrub removal. According to the numbers presented in the standard form and the surface area occupied by the species in the zone, the population abundance varies between 2 and 4 individuals per hectare. 195 – 390 individuals or 0.03 to 0.12% of the population in the zone will be at risk. Collision with motor vehicles or attraction by light fittings may cause mortality of adults. Slow moving transport, construction and mining equipment and the small range over which the light fittings have effect mean that single individuals will be at risk. The impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1074 Eastern eggar (*Eriogaster catax* (Linnaeus, 1758))

A comparatively large moth known in Middle Europe, Southern Europe and, partially, in Southwestern Asia. It occurs in Bulgaria in the lowest and warm parts, up to around 1,000 m a.s.l. It is a widespread species, but always with small and rare populations. This butterfly is typical of the deciduous forest belt. It inhabits the forest to shrub ecotone, meadows in forests, warm sunlit meadows with single trees or the outskirts of rarefied oak forests. Occurs also in hedges, including semi-natural hedges, and in some agroecosystems (Teodorescu & Stănescu 2019). The imago flies during the night, in September-October, and is attracted to sources of light. The larvae feed on wild pear (*Pyrus*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus*), oak (*Quercus*), poplar (*Populus*), and lives in groups in webbed nests between early April and late May. They pupate in the soil, in egg-shaped symmetric cocoons. Their eggs overwinter (Bekchiev et al. 2017).

Evaluation of the species in the zone

There are 80 to 865 individuals in the zone, according to the standard form. This species is designated as very rare (V), with 2 locations only. Its presence in the zone is unfavourable-unsatisfactory because of significant forestation with non-typical species and habitat damage by pollution and fire. Its potential habitats in the zone cover 39,256.6 ha. (18% of the territory). According to the Specific Project Report, the status of this species is favourable in all respects, except for the parameter Forest management, for which its status is unfavourable - unsatisfactory.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), the studied area includes several polygons with potential habitats of this species. It was found during the field studies that the meadows mapped by us in forest associations can also be accepted as potential habitats for the species.

Impacts:

Direct habitat destruction

3.33 ha or 0.008% of the potential habitats of the species in the zone are situated within the zone. Given the small affected area, the area-level impact, including the impact on the parameter Total area of the potential habitats, is assessed as **insignificant**.

Habitat fragmentation

There are 3 polygons with potential habitats of the species within the boundaries of direct impact. The remaining portion of these habitats will retain their features of habitat for this species which inhabits also small forest meadows. Fragmentation, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Barrier effect

The nature of the IP does not suggest a barrier effect for the imago because of the latter's mobility, being a flying insect. The larvae (caterpillars) move over comparatively small areas within the suitable habitats. **There will be no** barrier effect. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

Although the species was not found, the existence of potential habitats means that its presence within the IP boundaries cannot be ruled out. Mortality of individuals may be possible during the construction, grubbing and shrub removal. Collision with motor vehicles or attraction by light fittings may cause mortality of adults. The small surface area of the affected habitats, the slow moving transport, construction and mining equipment and the small range over which the light fittings have effect mean that single individuals will be at risk. The impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

4032 *Dioszeghyana schmidtii* (Diószeghy, 1935)

A relatively small moth (24-30 mm with spread wings) occurring in Eastern Europe and in Southwestern Asia. It occurs throughout the country, except for Southwestern Bulgaria, the Western Rhodopes and Dobrudja, and is present up to 900 m. a.s.l. in the mountains. It inhabits the edges of lighted oak forests with Tatarian maple (*Acer tataricum*). Flies at night in March - April (Bekchiev et al. 2017).

Evaluation of the species in the zone

There are 139300 to 204282 individuals in the zone, according to the standard form. The species is designated as common (C). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), 13 habitats of this species are established in the zone. The species is known from the Studen kladenets dam lake, the Studen kladenets village and the Kroyatski hunting enterprise near the Nanovitsa village (Beshkov & Langourov 2004). The total surface area of the potential habitats is 46,416.18 ha, or 21.35% of the zone. According to the Specific Project Report, the status of

this species is favourable in all respects, except for the parameter Forest management, for which its status is unfavourable - unsatisfactory.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), the region under consideration is situated in a zone with potential and optimal habitats of this species (mainly along the Byala Reka River and the Yuren Dere River). One documented location is found south of the IP area, near the Byalgradets village, and the other (further away) is south of the Pastrook village.

Impacts:

Direct habitat destruction

15.73 ha or 0.038% of the potential habitats of the species in the zone are situated within the zone. Given the small affected area, the area-level impact, including the impact on the parameter Total area of the potential habitats, is assessed as **insignificant**.

Habitat fragmentation

Parts of 2 large polygons with potential habitats of the species and a number of smaller habitats within the boundaries of direct impact will be affected partially. The remaining portion of these habitats will retain their features of habitat for this species which is dependent on its trophic plant - a pioneering species. Fragmentation, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Barrier effect

The nature of the IP does not suggest a barrier effect for the imago because of the latter's mobility, being a flying insect. The larvae (caterpillars) move over comparatively small areas within the suitable habitats. Barrier effect is possible but will be **insignificant**. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

Although the species was not found, the existence of potential habitats means that its presence within the IP boundaries cannot be ruled out. Mortality of individuals may be possible during the construction, grubbing and shrub removal. Collision with motor vehicles or attraction by light fittings may cause mortality of adults. The comparatively small surface area of the affected habitats, the slow moving transport, construction and mining equipment and the small range over which the light fittings have effect mean that single individuals will be at risk. The impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1083 Stag beetle (*Lucanus cervus* Linnaeus, 1758)

European species. Bulgaria's largest beetle (4.5-9.0 cm). In Northern Bulgaria this species occurs in the lowest and warm parts, at elevations of up to 1,000 m., while it has been

found in the southern parts of the country at elevations of up to 1,500 m. a.s.l. It prefers old oak, oak-hornbeam and pine-durmast oak forests in the lowlands and in low-mountain areas. It is frequent resident in the edges of lighted deciduous and mixed forests. The imago occurs on the stems of old and thick trees (less often on other trees), where it feeds on sap from damaged parts. Flies at dusk, clumsily and noisily. The female lays eggs in old tree stumps, and the newly hatched larvae feed on rotting wood. The larvae grow normally for 5 (up to 8) years in the rotten wood of tree trunks, tree stumps and roots of *Quercus*, *Tilia*, *Fagus*, *Salix*, *Populus*, *Corylus*, *Fraxinus*, *Castanea*, fruit trees (such as cherry), and is found very rarely in coniferous trees. This species' seasonal development depends on elevation, latitude and weather. Usually, adults appear in late May, with males completing their development approximately a week earlier than females. They can be seen until late September (Zingstra et al. 2009, Bekchiev et al. 2017).

Evaluation of the species in the zone

There are 733930 to 1443777 individuals in the zone, according to the standard form. The species is designated as rare (R). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), this species has been registered in 32 locations. This species was announced in the villages of Bubino and Popsko (Bechev & Stoyanova 2004). Its potential habitats occupy 139,718.2 ha. According to the Specific Project Report, the status of this species is favourable in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), the studied area is situated almost completely in the optimal and potential habitats of this species. The nearest registered location is south of the Pastrook village. We found during our field studies that the forests in the IP area are exceptionally suitable for the existence of a stable population of this species. Two females were found in the IP buffer zone near the Byala Reka River. This species' feeding and development in the region are directly related to one of the main natural habitats in the protected zone - 91M0 Pannonian-Balkan turkey oak-sessile oak forests, covering approximately 31% of the zone, which occupies the main part of the IP area.

Impacts:

Direct habitat destruction

Also, some actual and potential habitats of this species are present in the IP area. IP implementation will cause the loss of 123.4 ha or 0.088% of the potential habitats of the species in the zone are situated within the zone. Given the small affected area, the impact, including the impact on the parameter Area of the potential habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a large polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. Fragmentation, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Barrier effect

The nature of the IP does not suggest a barrier effect for the imago because of the latter's mobility, being a flying insect. During their life cycles, the larvae move in the wood of the tree in which they reside. Barrier effect is possible but will be **insignificant**. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

The species inhabits some locations in the IP and the likelihood of individuals being present during the activities in the IP area cannot be ruled out. Mortality of individuals may be possible during the construction, grubbing and shrub removal. According to the numbers presented in the standard form and the surface area occupied by the species in the zone, the population abundance varies between 5 and 10 individuals per hectare. 600 – 1250 individuals or 0.04 to 0.17% of the population in the zone will be at risk. Collision with motor vehicles or attraction by light fittings may cause mortality of adults. Slow moving transport, construction and mining equipment and the small range over which the light fittings have effect mean that single individuals will be at risk. The impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1088 Great capricorn beetle (*Cerambyx cerdo* Linnaeus, 1758)

A saproxylic beetle. It is widespread throughout Bulgaria. Occurs in Northern Bulgaria at elevations of up to 800 m, and, in Southern Bulgaria, up to 1,000 m, and up to 1,500-1,600 m. a.s.l. in the Slavyanka mountain. Inhabits old-growth deciduous forests. This species breeds mainly on oaks (*Quercus*) and, less often, on *Castanea*, *Betula*, *Salix*, *Fraxinus*, *Ulmus*, *Juglans* and *Corylus*. It prefers ill or dying old oak trees exposed to the sun (mostly common oak, less often Durmast oak, beech or elm trees), more frequently on the moist trunks in sunny spots in old growth or long-decaying forests. The larvae are xylophagous, living in, and feeding on, the rotting wood of old or dead trees, and developing for 2 to 3 years. The eggs are deposited in crevices of tree bark. The adult insect flies in May - August. This species is threatened by total habitat changes, forest fires, replacement of tree plant composition, pollution, pesticides and large infrastructure projects (Zingstra et al. 2009, Bekchiev et al. 2017).

Evaluation of the species in the zone

There are 719443 to 1061539 individuals in the zone, according to the standard form. The species is designated as rare (R). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), this species has been registered in 8 georeferenced locations in the zone. Its potential habitats occupy 104,966.7 ha. According to the Specific Project Report, the status of this species is favourable in all respects, except for the parameter Intensity of fires, for which its status is unfavourable - unsatisfactory.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), the region under consideration includes both optimal and potential habitats of this species. The nearest registered location is south of the Zhelezino village. One male *Cerambyx cerdo* was found in the IP area (in the area intended for pit construction). *Cerambyx cerdo* feeding and development in the region are directly related to one of the main natural habitats in the protected zone - 91M0 Pannonian-Balkan turkey oak-sessile oak forests, covering approximately 31% of the zone, which occupies the main part of the IP area.

Impacts:

Direct habitat destruction

Also, some actual and potential habitats of this species are present in the IP area. IP implementation will cause the loss of 97.41 ha or 0.009% of the potential habitats of the species

in the zone are situated within the zone. Given the small affected area, the impact, including the impact on the parameter Area of the potential habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a large polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. Fragmentation, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Barrier effect

The nature of the IP does not suggest a barrier effect for the imago because of the latter's mobility, being a flying insect. During their life cycles, the larvae move in the wood of the tree in which they reside. Barrier effect is possible but will be **insignificant**. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

The species inhabits some locations in the IP and the likelihood of individuals being present during the activities in the IP area cannot be ruled out. Mortality of individuals may be possible during the construction, grubbing and shrub removal. According to the numbers presented in the standard form and the surface area occupied by the species in the zone, the population abundance varies between 7 and 10 individuals per hectare. 680 – 980 individuals or 0.06 to 0.14% of the population in the zone will be at risk. Collision with motor vehicles or attraction by light fittings may cause mortality of adults. Slow moving transport, construction and mining equipment and the small range over which the light fittings have effect mean that single individuals will be at risk. The impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1087 Alpine longhorn beetle (*Rosalia alpina* Linnaeus, 1758)

A relict species in Europe. It is present mainly in the pre-mountain areas (northern Balkan area) and in mountains (Stara planina, Vitosha, Sredna gora, Rila, Pirin, Maleshevska mountain, Western and Central Rhodopes, Strandja, Belasitsa, and Slavyanka). It occurs at elevations of up to 1,200 m. a.s.l., reaching up to 1,500 m. in the Southern Pirin and Slavyanka mountains and inhabits old deciduous forests. This beetle develops mainly on beech trees (*Fagus*) and, also, on *Carpinus*, *Fraxinus*, *Betula*, *Ulmus*, *Acer*, *Alnus*, *Castanea*, *Crataegus*, *Juglans*, *Larix*, *Quercus*, *Salix*, *Tilia*. The larvae are xylophagous, living in, and feeding on, the rotting wood of old or dead trees. The eggs are deposited in crevices of tree bark. The adults are active on sunny days in July-September. They can be found around the trees they came from and on old fallen trees. The beetles feed on the sap of damaged trees. The larvae are xylophagous, living in, and feeding on, the rotting wood of old or dead trees. The larvae drill holes into the dying wood and pupate in 2-3 years' time. This species is threatened by: complete habitat change, felling of old beech forests, forest fires, replacement of tree plant composition, pollution, pesticides and large infrastructure projects (Zingstra et al. 2009, Bekchiev et al. 2017).

Evaluation of the species in the zone

There are 141916 to 258451 individuals in the zone, according to the standard form. The species is designated as rare (R). According to data from the 'Mapping and determining the

nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), this species has been registered in 2 georeferenced locations in the zone. Not many habitats suitable for the development of this species (beech forests) were found, and they are situated mainly on the high ridges along the Eastern Rhodopes boundary. Its potential habitats in the protected zone occupy 24,012 ha. According to the Specific Project Report, the status of this species is favourable in all respects.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022) no potential habitats of this species exist in the studied area. During our field studies we found suitable, albeit sub-optimal, habitats for this species, in Yuren Dere, covering an area of 10 ha.

Impacts:

Direct habitat destruction

No potential habitats of this species exist in the IP area. IP implementation will cause the loss of around 10 ha or 0.042% of the potential habitats of the species in the zone are situated within the zone. Given the small affected area, the impact, including the impact on the parameter Area of the potential habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. Fragmentation, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Barrier effect

The nature of the IP does not suggest a barrier effect for the imago because of the latter's mobility, being a flying insect. During their life cycles, the larvae move in the wood of the tree in which they reside. **There will be no** barrier effect. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

The species was not found in the IP and the likelihood of individuals being present during the activities in the IP area cannot be ruled out. Mortality of individuals may be possible during the construction and grubbing. The comparatively small affected area and the sub-optimal nature of the habitats mean that only singular individuals will be at risk. The impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

1089 Long-horned beech beetle (*Morimus funereus* Mulsant, 1862)

A saproxylic beetle present mainly in the pre-mountain areas (northern Balkan area) and in mountains (Stara planina, Vitosha, Sredna gora, Rila, Maleshevska mountain, Western and Central Rhodopes, Belasitsa, and Slavyanka). It occurs between 50 and 1,700 m. a.s.l. This beetle inhabits predominantly deciduous and mixed forests (*Fagus*, *Populus*, *Tilia*, *Acer*, *Salix*, *Carpinus*, *Quercus* etc.), with standing and fallen deadwood, but also occurs in coniferous

forests. It is a wingless beetle, incapable of flight, which explains its poor resettlement capabilities. It develops in rotting moist wood (tree stems, logs, trunks, stumps, tree bark) lying on the ground surface, most often oak, beech, poplar, horse chestnut, and fir. Adults meet in April-September on tree trunks and stems, and among rotting wood. This species is threatened by total habitat changes, forest fires, replacement of tree plant composition, pesticides and large infrastructure projects (Zingstra et al. 2009, Bekchiev et al. 2017).

Evaluation of the species in the zone

There are 1023658 to 1189018 individuals in the zone, according to the standard form. The species is designated as rare (R). According to data from the 'Mapping and Determining of the Nature Conservation Status of Natural Habitats and Species - Phase I' Project (MOEW 2022), there are 6 mapped locations of this species in the villages of Doborsko, Perunika, Bubimo, Popsko, and Dolna kula (Bechev & Stoyanova 2004). Its potential habitats occupy 130,822.2 ha. According to the Specific Project Report, the status of this species is favourable in all respects, except for the parameter Intensity of fires, for which its status is unfavourable - unsatisfactory.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), the studied area is situated almost completely in the optimal and potential habitats of this species. During our field studies, we found many habitats that are suitable for the species, which was not found, though.

Impacts:

Direct habitat destruction

No potential habitats of this species exist in the IP area. IP implementation will cause the loss of 143.35 ha or 0.11% of the potential habitats of the species in the zone are situated within the zone. Given the small affected area, the impact, including the impact on the parameter Area of the potential habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a large polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. Fragmentation, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Barrier effect

Adults do not travel very far from the trees in whose wood their larvae develop. During their life cycles, the larvae move in the wood of the tree in which they reside. Barrier effect is possible but will be **insignificant**. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

The species was not found in the IP and the likelihood of individuals being present during the activities in the IP area cannot be ruled out. Mortality of individuals may be possible during the construction, grubbing and shrub removal. According to the numbers presented in the standard form and the surface area occupied by the species in the zone, the population abundance is 8 - 9 individuals per hectare. 1150 – 1300 individuals or 0.1-0.13% of the population in the zone will be at risk. Crushing by motor vehicles may cause mortality of adults. Singular individuals will be at risk since the adults do not travel very far from the trees in whose wood

their larvae develop. The impact on the population in the zone, including the impact on the parameters under Criterion 1. Population within the zone, will be **insignificant**.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

4022 Wrinkled darkling beetle (*Probatiscus subrugosus* (Duftschmidt, 1812)).

A litter beetle (Tenebrionidae), representative of the typically steppe dwelling species distributed mainly in NW Kazakhstan, the southern parts of European Russia and Ukraine, and reaching Romania, Bulgaria and Greece in the western parts of its range. It is known from singular findings, most of which in the Upper Thracian pan valley and the remaining in Soutwestern Bulgaria and along the Black Sea coastline. This species is still insufficiently studied in Bulgaria. It is an indicator of preserved steppe-loess communities (a steppe-loess relict). Adheres to bare calcareous terrains with meadow vegetation. A rare species inhabiting open and dry calcareous slopes of predominantly southern exposure, overgrown with steppe vegetation (Bekchiev et al. 2018). The larvae develop for 1 year in the soil and feed on plant roots. During prolonged draught they migrate into the deep soil layers and enter diapause. Pupating occurs during the summer. The imago overwinters. Adults appear in April, when the air temperature is around 17-20°C. They feed on plant residue and, less frequently, sprouts of dicots. The beetles are active at dusk and during the night, hiding under stones and in abandoned rodent holes during the day. Their larvae do not leave the topsoil and the imago is active (leaving the subterranean habitats) for 2 months only (April - May) without leaving its biotopes. The eggs are laid in crevices and hollows in the soil (Zingstra et al. 2009, MOEW 2022).

Evaluation of the species in the zone

This species is indicated as very rare (V) in the standard form. According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), this species has not been established in the zone. Its potential habitats occupy 7,325.7 ha.

Evaluation of the species in the studied region

According to data from the 'Mapping and Determining of the Nature Conservation Status of Natural Habitats and Species - Phase I' Project (MOEW 2022), the nearest potential habitat of the species is between the villages of Rozino, Pastrook, and Sokolentsi, approximately 5 km. north of the IP. No potential habitats of this species are present in the studied area.

Impacts:

No actual and potential habitats of this species are present in the studied area. The IP will **have no impact** on bear habitats and populations in the zone.

1084 Hermit beetle (*Osmoderma eremita* (Scopoli, 1763))

A large beetle (2.8-3.2 cm), perhaps spread throughout Bulgaria. Only 20 findings are known so far (the mountains Stara planina, Rila, South Pirin, Belasitsa etc.). Occurs in old deciduous forests, the forest edges and river banks being its frequently preferred habitats. It inhabits almost exclusively rotting and decaying old trees with hollows. When choosing habitats it would prefer oaks (*Quercus* sp.) first, followed by lime trees (*Tilia* sp.), willow trees (*Salix* sp.), beech trees (*Fagus sylvatica*), plane trees (*Platanus orientalis*), and occurs also in old fruit trees. The females lay their eggs in the decaying wood in tree hollows where the larvae develop. Larval development is for 2-3 years long. Adult insects can be seen between May and early September, but are observed most often in June and July. Having a very poor resettlement capacity, the beetles rarely travel for more than 1-2 km. from the tree hollow in which they have developed, spending most of their lives in it. Approximately 70% of the beetles never leave their

natal tree during their lives. This species is threatened by felling of old trees with hollows (Bekchiev et al. 2017).

Evaluation of the species in the zone

There are 102651 to 201042 individuals in the zone, according to the standard form. The species is designated as rare (R). According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), this species has been registered in 2 locations in the zone. Since this species inhabits old growth forests, which are fragmented in the Protected Zone, of insufficient area and with insufficient number of old hollow trees, its nature conservation status in the zone is unfavourable-unsatisfactory. Its potential habitats occupy 60,974.15 ha. According to the Specific Project Report, the status of this species is favourable in all respects, except for the parameters Number of habitats, Total area of suitable habitats in the established locations (since no habitats of this species have been found in the zone), and Intensity of fires, for which its status is unfavourable - unsatisfactory.

Evaluation of the species in the studied region

According to data from the 'Mapping and determining the nature conservation status of natural habitats and species – Phase I' Project (MOEW 2022), some potential habitats of this species are situated in the studied area. They are scattered, mainly along the IP boundaries. We found during the field studies that predominantly sections occupied by younger oak forests have been mapped as potential habitats for this species, while the old growth forests along Yuren Dere have not been mapped as such habitats. We are of the opinion that these are potential habitats of this species.

Impacts:

Direct habitat destruction

No potential habitats of this species exist in the IP area. IP implementation will cause the loss of around 10 ha or 0.016% of the potential habitats of the species in the zone are situated within the zone. Given the small affected area, the impact, including the impact on the parameter Area of the potential habitats, is assessed as **insignificant**.

Habitat fragmentation

The IP includes a portion of a large polygon of potential habitats of the species in the area, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. Fragmentation, including the impact on the parameter Total area of the potential habitats, will be **insignificant**.

Barrier effect

This species is sedentary and does not travel outside, and does not leave, the habitats with specific conditions. **There will be no** barrier effect. **There will be no** impact also on the nature-conservation status parameters for this species.

Disturbance

Invertebrates are insensitive to the type of disturbance caused by construction and IP implementation. **There will be no** impact. **There will be no** impact also on the nature-conservation status parameters for this species.

Mortality

The species was not found in the IP and the likelihood of individuals being present during the activities in the IP area cannot be ruled out. Mortality of individuals may be possible during the construction and grubbing. The comparatively small affected area means that only singular individuals will be at risk. The impact on the population of in the zone will be **insignificant**. **There will be no** impact also on the nature-conservation status parameters for this species.

There will be no impact also on the remaining nature-conservation status parameters for this habitat.

V.1.2. Byala Reka Protected Area, Code BG0002019

A402 Levant sparrowhawk (*Accipiter brevipes*)

Nesting-migratory and transitory species. Its autumn migration occurs mainly in September, and its spring time migrations begins in late April. This species nests in rarefied deciduous forests, wooded river valleys, groups of trees in open spaces in plain lands and in or in groups of preserved old trees among younger forests in lowlands and in mountain foothills, up to 700 m asl. Its nests are in trees, near the stem, at a height of 6-12 m. The eggs are laid in May. Only the female broods, for 30 to 35 days. The chicks remain in the nest for about 45 days and leave it before their rectrices are fully grown. They stay near the nest, spending most of the time on the ground. This species feeds most frequently on mouse-like rodents, song birds, lizards, and grasshoppers. It hunts in open spaces, including farmlands (Golemanski 2011, Simeonov et al. 1990, Yankov 2007, Jonsson 2006).

Evaluation of the species in the zone

There are 2 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are the forest massifs with taller and old trees or groups of such trees (habitat N16 according to the standard form) with an area in the zone of 24,955.22 ha. The open areas and farmlands in the zone can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N21, N22), with a total area of 16,708.22 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. Potential nesting habitats of this species are situated in the studied area, comprising all deciduous forest types, although having a denser canopy, these habitats should be considered sub-optimal. Also, some trophic grounds for the species exist in the region - broader grass and shrub habitats predominantly in the northern part of the studied area.

Impacts:

Direct habitat destruction

112.12 ha or 0.45% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. 2.52 ha or 0.02% of the feeding habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. **There will be virtually no** fragmentation since this species nests also in groups of trees. As regards the trophic habitats, the hunting area in one of the two affected polygons will be insufficient for this species. Therefore, in total 2.53 ha or 0.02% of the trophic habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. 188.51 ha or 0.76% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 245.82 ha or 0.99% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections

and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise. Furthermore, the nesting habitats in the studied area are sub-optimal.

4.62 ha or 0.03% of the potential trophic habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 9.89 ha or 0.06% of the potential trophic habitats of the species in the zone will be affected during the drilling and blasting operations.

There will be **insignificant** impact on both habitat types.

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area will be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely. Both impacts can be eliminated with adequate measures.

Measures:

- Mine construction works should begin outside the species' breeding period (May 01 - August 15) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or chicks. Beginning work during this period is admissible only if an expert ornithologists carry out monitoring (at least 8 hours of stationary observation) and the species is not observed in less than 110 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

- The poles for a 20 kV powerline should be of a type preventing electrocution of birds, or with insulated live parts. An ornithology expert should be consulted about this measure during the engineering design phase.

Phase: Engineering.

Effect: Elimination of the mortality risk for individuals of the species.

- Deflecting (contact) plates (bird diverters), rotating spheres or spirals made of phosphorescent material must be installed on the strike termination cables of powerlines above 20 kV. An ornithology expert should be consulted during the engineering design phase about the type, longitudinal placement and spacing of these devices.

Phase: Engineering.

Effect: Elimination of the mortality risk for individuals of the species.

A086 European sparrowhawk (*Accipiter nisus*)

This species nests in deciduous, mixed and coniferous forests, along the fringes of such forests, and in open areas with groups of trees. It occurs in various habitats during the autumn and winter, including open spaces, arable lands, parks, and in the surroundings of urban areas. Its nests are in trees, at a height of 4-22 m. The eggs are laid in May. Brooding lasts for 30-33 days. The chicks leave the nest at 30-35 days of age. Sedentary and migrating species. This species feeds mainly on birds and, to a lesser degree, on mammals (Simeonov et al. 1990).

Evaluation of the species in the zone

There are 3 to 18 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are all forest massifs or groups of trees (habitats N16,

N17 and N19 according to the standard form) with an area in the zone of 16,454.68 ha. All habitat types, except for the aquatic types, (N08, N09, N10, N12, N15, N16, N17, N19, N20, N21, N22, and N23) on an area of 44626.646 ha. should be regarded as feeding habitats in the zone.

Evaluation of the species in the studied region

This species was found during migration, in Yuren Dere (a feather collected and subsequently identified), and south of Rozino village (a bird sighted flying southward). The studied area includes some potential nesting habitats for this species - all forest types, including coniferous plantations. The area includes trophic habitats of this species - virtually all habitats other than the river flows.

Impacts:

Direct habitat destruction

140.85 ha or 0.53% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. 145.92 ha or 0.33% of the feeding habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting and feeding grounds for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. **There will be virtually no** fragmentation since this species nests also in groups of trees and hunts in various habitats.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. 233.40 ha or 0.88% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 278.00 ha or 1.05% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise.

242.03 ha or 0.55% of the potential trophic habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 294.14 ha or 0.67% of the potential trophic habitats of the species in the zone will be affected during the drilling and blasting operations. This species is less sensitive in its trophic habitats because it hunts also in urban areas.

There will be **insignificant** impact on both habitat types.

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' numerous population in the area will be **significant**, given its relatively low numbers. This impact may be eliminated by suitable measures.

Mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely. Both impacts can be eliminated with adequate measures (see *Accipiter brevipes*).

Measures:

- Mine construction works should begin outside the species' breeding period (May 01 - July 30) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or Beginning work during this period is admissible only if an expert ornithologists carry out monitoring (at least 8 hours of stationary observation) and the species is not observed in less than 110 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A168 Common sandpiper (*Actitis hypoleucos*)

Nesting, migrating and, occasionally, wintering species. This species inhabits various water bodies. It prefers rivers and channels, but occurs also in fisheries, marshes, swamps, dam lakes, lakes, rice paddies etc., with less vegetated banks. Its nesting period is between May and July. The nests are on the ground, close to water. The chicks are nidifugous. Their spring-time migration in the Czech Republic is in April - May. The species appears in Norway a month later. Its autumn migration in England is in August - September, and in July and August in the Czech Republic. This species feeds on insects and its larvae, crustaceans, worms, molluscs, parts of plants, and extremely rarely on small fish (Nankonov et al. 1997, Adamík & Pietruszková 2008, Barrett 2002, Hubálek 2003, Newton et al. 2010, personal observations).

Evaluation of the species in the zone

There are 3-4 nesting pairs in the zone, according to the standard form. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

The species was not found in the area. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

A079 Black vulture (*Aegypius monachus*)

Sedentary and wandering species. It nests in spacious old deciduous forests in plains and low mountain areas. The nests are in tree canopies and, rarely, on rocks. Not more than 2 pairs had supposedly been nesting occasionally in Bulgaria in 2006. The birds seen in Bulgaria nest in Greece and visit Bulgaria in search of food. The feed predominantly on medium-sized to large of livestock and wild animal carcasses, which it searches for in open areas (Golemanski 2011, Simeonov et al. 1990).

Evaluation of the species in the zone

The zone is occupied by 46 individuals, according to the standard form. This species had not been sighted during the studies under the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), but it should be noted that it visits the region in search of food. Its population in 2007 was estimated at 15 individuals.

Evaluation of the species in the studied region

This species was not sighted during the field studies. This species does not nest in the zone. This species is trophically linked to large ungulates on whose carcasses it feeds (mainly livestock, nowadays), and, therefore, it does not rely on a certain habitat type, especially since it is being artificially fed (on a feeding pad near Madjarovo).

Impacts:

This species does not nest in the zone. The prerequisites for nests with eggs or young poorly flying chicks are not present in the IP area. This species is trophically linked to large ungulates on whose carcasses it feeds (mainly livestock, nowadays), and, therefore, it does not rely on a certain habitat type, especially since it is being artificially fed (on a feeding pad near Madjarovo). **There will be and no impacts** on this species and its habitats.

A229 Kinfisher (*Alcedo atthis*)

Sedentary species. Inhabits rivers, swamps, lakes, dam lakes, fish farms and other water impoundments near (appr. 50 m) vertical clayey, sandy and gravelly banks in which it digs its nests. Nests between May and June and, occasionally, a second time between July and August. Brooding lasts for 18-21 days and the chicks leave the nest at 23-27 days of age. In winter it leaves the water impoundments which it inhabits during the breeding period, and occurs along non-freezing parts of rivers, dam lakes, fish farms and unfrozen water. It feeds on small fish and, very rarely, on frogs and crustaceans (Nankinov et al. 1997).

Evaluation of the species in the zone

There are 10 to 21 nesting pairs in the zone, according to the standard form. Nine more individuals are present here outside the breeding period. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

The species was found along the Byala river flow, outside the boundary of potential impact. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation and unsuitable for nesting.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

A053 Mallard (*Anas platyrhynchos*)

Sedentary, wintering and migrating. During the breeding period it inhabits rivers, swamps and lakes with lush riparian vegetation, dam lakes, fish farms, and artificial lakes in parks. During migration it occurs also in the sea. This species nests on the ground or in tree forks. It lays up to 13 eggs between late March and late June. Brooding is 27-28 days long. The chicks start flying in around 50-60 days. Migration occurs between February and mid March, and between October and November. The wintering birds relocate during the entire winter, depending on the conditions in a water body. It feeds on the green parts of plants, seeds, and crops, insects, larvae, and molluscs (Nankinov et al. 1997).

Evaluation of the species in the zone

There are 2 nesting pairs in the zone, according to the standard form. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

The species was found along the Byala river flow, outside the boundary of potential impact. No potential habitats of this species are present in the studied area - the rivers and streams in the region are low in water, with densely overgrown with forest vegetation and no riparian vegetation, and are unsuitable for nesting.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

A255 Tawny pipit (*Anthus campestris*)

Nesting and migrating species. Occurs in dry, hot, open areas and pastures with rare grassy vegetation and, frequently, sandy soil, small extensively used meadows or uncultivated land. Sometimes it is present in large, intensively used farmlands with earthed-up crops. It avoids steep, very stony or shrubby terrains. Its usual habitation are plains between sea level to up to 500 m. a.s.l., and less often in mountains up to 1,300 m a.s.l. The nest is placed in a small pit in the ground and is well hidden by grassy vegetation. One to two clutches are laid per year. In Bulgaria the eggs in the first clutch begins in the second half of May and in early June. Three to six eggs are laid. The chicks leave the nest at about 14 days, and at the age of 30 days are completely independent. This species does not migrate in large clusters. The spring migration occurs mainly in April-May, and the first birds arrive in the southernmost parts of Bulgaria in the second half of March. In some areas the autumn migration begins as early as August, but the main migration period is September - October. This species feeds on various insects. In the autumn and winter it feeds on the seeds of various grassy plants (Ivanov 2011, Yankov 2007).

Evaluation of the species in the zone

There are 2 nesting pairs in the zone, according to the standard form. The potential (nesting and trophic) habitats for the species in this zone are the dry grassy areas (habitat N09 according to the standard form) with an area in the zone of 5,319.50 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. The studied area includes some potential habitats of this species - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no** direct habitat destruction.

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no** habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is not highly sensitive to disturbance, including in its nesting habitats. Generally, 0.387 ha or 0.01% of the potential habitats of the species in the zone are situated within the boundaries of potential impact (in the studied area). There will be **insignificant** impact, if any.

Mortality

Habitats of this species are present in the IP area. The prerequisites for nests with eggs or young poorly flying chicks are not present. **There will be no mortality.**

A091 Golden Eagle (*Aquila chrysaetos*)

Sedentary and wandering species. The young birds wander until reaching sexual maturity. During the nesting period, this species occurs in the low-mountain areas and up to the Alpine mountain belt. The species is monogamous. The pairs build 2-3 nests. One pair inhabits an area of 50 to 200 km² in which it stays also outside the nesting period. The species nests in spacious, high, inaccessible rock walls and rocky river valleys near vast open spaces where it hunts. Very rarely it nests in forests, on old trees. The nesting period begins in March, and 1-2 eggs are laid in April. Brooding is approximately 43-45 days long. The chicks hatch in late May and leave the nests after approximately 74-80 days, around August 15. In the autumn and winter it can be seen far from rocky terrains. This species feeds on small and medium-sized mammals, reptiles, birds, and carrion (Golemanski 2011, Simeonov et al. 1990, personal observations).

Evaluation of the species in the zone

There are 2-3 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are the rocky areas (habitat N22 according to the standard form) with an area in the zone of 410.57 ha. All open habitat types in the zone can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N22), with a total area of 15,851.39 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. No potential nesting habitats of this species are present in the studied area - the rocks in the southern part are too low for the species. Some feeding grounds for the species exist in the region - broader grass and shrub habitats predominantly in the northern part of the studied area.

Impacts:

Direct habitat destruction

2.52 ha or 0.02% of the potential trophic habitats of the species in the zone are situated within the boundaries of direct impact. No nesting habitats will be impacted. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a portion of a polygon of potential feeding grounds for the species, and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 2.53 ha. or 0.02% of the potential habitats of the species in the area. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is more sensitive toward disturbance in its nesting habitats which are not present within the boundaries of potential impact. Generally, 6.13 ha or 0.04% of the potential trophic habitats of the species in the zone are situated within the boundaries of potential impact (in the studied area). No nesting habitats will be impacted. The impact will be **insignificant**.

Mortality

No nesting habitats of this species are present in the studied area. The prerequisites for nests with eggs or young poorly flying chicks are not present. **There will be no mortality.**

A404 Imperial eagle (*Aquila heliaca*)

Nesting and migrating, transient and partially wintering species. Its spring-time migration starts between the second half of February and late March while its autumn migration starts in early September and lasts until late November. This eagle prefers to nest on high single trees near deciduous and coniferous forests, oasis groves and windbreak strips, in or near open spaces, but always close to flowing water 300-500 m. away. It also nests on power-line pylons. Nesting in forests occurs if no suitable trees are present in the open spaces and/or because of human persecution. The species lays eggs in April. Brooding is 43 days long. The chicks leave the nest at 65-77 days of age. This species feeds on mammals, mainly ground squirrels, and less often birds, hunting in open areas or in wetlands (Heredia 1996, Horváth 2009, Golemanski 2011, MOCB 2022, Simeonov et al. 1990).

Evaluation of the species in the zone

There are 1-2 nesting pairs in the zone, according to the standard form. Since a microhabitat - a single suitable nesting tree in an open space - is required by this species, the open spaces in the zone can must be regarded as potential nesting habitats for this species. All forest massifs or groups of trees (habitats N16, N17 and N19 according to the standard form) with an area in the zone of 16,454.68 ha. can be regarded as sub-optimal nesting habitats for the species in this zone. All open habitat types in the zone can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N22), with a total area of 15,851.39 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. The studied area includes some potential nesting habitats for this species - all forest types, including coniferous plantations, but they are sub-optimal because the species prefers nesting on single trees or in clusters of trees in spacious open areas. To some extent, such spaces are available mainly in the northern part of the studied area, habitat 6210, which is a trophic habitat for this species.

Impacts:

Direct habitat destruction

140.85 ha or 0.53% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. 1.52 ha or 0.01% of the feeding habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. **There will be virtually no** fragmentation of nesting habitats because this species nests also in groups of trees.

The direct impact boundaries include a portion of a polygon of potential feeding grounds for the species, and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 1.61 ha. or 0.01% of the potential habitats of the species in the area. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. 233.40 ha or 0.88% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 278.00 ha or 1.05% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting

operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise. Furthermore, the nesting habitats in the studied area are sub-optimal.

2.59 ha or 0.02% of the potential trophic habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 4.53 ha or 0.03% of the potential trophic habitats of the species in the zone will be affected during the drilling and blasting operations.

There will be **insignificant** impact on both habitat types.

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area will be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely. Both impacts can be eliminated with adequate measures (see *Accipiter brevipes*).

Measures:

- Mine construction works should begin outside the species' breeding period (April 01 - July 30) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or Beginning work during this period is admissible only if an expert ornithologists carry out monitoring (at least 8 hours of stationary observation) and the species is not observed in less than 110 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A089 Lesser spotted eagle (*Aquila pomarina*)

This species nests in deciduous and mixed forests near river valleys, pasture lands, meadows, and marshes. The nest is situated on trees in the marginal forest areas, at a height of 2 to 55 m. The eggs are laid in early May. Brooding is 38-41 days long. The chicks leave the nest at around 55 days of age. A migratory species. The spring migration takes place between mid-February and early April, and the autumn migration begins in August and lasts until mid-October. During migration this species is widespread in open areas. It feeds on small mammals, lizards, frogs, and insects (Simeonov et al. 1990, Jonsson 2006).

Evaluation of the species in the zone

There are 4 to 12 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are all forest massifs or groups of trees (habitats N16, N17 and N19 according to the standard form) with an area in the zone of 16,454.68 ha. All open habitat types in the zone can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N22), with a total area of 15,851.39 ha.

Evaluation of the species in the studied region

This species was established only once, during migration south of the Rozino Village (a bird flying in a south-western direction). The studied area includes some potential nesting habitats for this species - all forest types, including coniferous plantations. Also, some trophic

grounds for the species exist in the region - broader grass and shrub habitats predominantly in the northern part of the studied area.

Impacts:

Direct habitat destruction

140.85 ha or 0.53% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. 2.52 ha or 0.02% of the feeding habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. **There will be virtually no** fragmentation of nesting habitats because this species nests also in groups of trees.

The direct impact boundaries include a portion of a polygon of potential feeding grounds for the species, and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 2.53 ha. or 0.02% of the potential habitats of the species in the area. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. 233.40 ha or 0.88% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 278.00 ha or 1.05% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise.

4.62 ha or 0.03% of the potential trophic habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 9.89 ha or 0.06% of the potential trophic habitats of the species in the zone will be affected during the drilling and blasting operations.

There will be **insignificant** impact on both habitat types.

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area will be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely. Both impacts can be eliminated with adequate measures (see *Accipiter brevipes*).

Measures:

- Mine construction works should begin outside the species' breeding period (May 01 - July 05) so that a pair breeding in the area can relocate its nesting site (if activities are initiated

near the nest) without loss of eggs and/or chicks. Beginning work during this period is admissible only if an expert ornithologists carry out monitoring (at least 8 hours of stationary observation) and the species is not observed in less than 110 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A028 Grey heron (*Ardea cinerea*)

Nesting and migrating, transient and wintering species. The breeding period starts in early March and lasts until late July. This species nests in individual or mixed colonies of herons, glossy Ibises, spoonbills and pygmy cormorants. The nests are situated in reed growth, on trees (white willow, white poplar and hybrid poplar, oak, ash, lime, or beech) and, rarely, on rocks in and around fresh-water lakes and swamps, inundated forests, dam lakes and small dams, fish farms and fish hatcheries, as well as larger rivers. Feeds on fish, amphibians, reptiles and mouse-like rodents. It forages, including during migration and wintering, in river-side brackish water bodies, lakes, swamps, dam lakes and small dams, fish farms and fish hatcheries, rivers, and also in meadows, rice paddies, irrigation channels, mainly in the low-land areas of Bulgaria. Migration occurs between February and April and September and October (Golemanski 2011, Simeonov et al. 1990, personal observations).

Evaluation of the species in the zone

There are 3 to 15 wintering individuals in the zone, according to the standard form. This species is represented (P) during migration. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

Found during migration along the Byala River flow and around the micro-dam lake near Rozino village. Outside the boundary of potential impact. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A215 Eagle owl (*Bubo bubo*)

Occupies karst and volcanic rocks, gorges, defiles, degraded lands, and nests on rocks or in niches in earth banks. Mating begins in March. Two to four white eggs are laid in early April and brooding lasts for 33-36 days. Hatching occurs in mid-May. The chicks can leave their nest and can move away from it at the age of 40-49 days, or, at the latest, by the end of June. The adults care for their young until October. This species feeds on mammals, birds, frogs and invertebrates, hunting in open areas such as meadows, pastures and arable lands. The area in which the birds hunt most actively is 1-2 km. around the nest (Golemansk 2011, Simeonov et al. 1990, Penteriani et al. 2005, Sándor & Bugariu 2008, Simeonov et al. 1998, Van Nieuland et al. 2018).

Evaluation of the species in the zone

There are 2 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are the rocky areas (habitat N22 according to the standard form) with an area in the zone of 410.57 ha. All open habitat types in the zone can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N22), with a total area of 15,851.39 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. The rocks in the southern part of the studied area are potential nesting habitats of this species. All open habitat types in the area, such as grassy, shrubby and rocky habitats, should be regarded as trophic habitats.

Impacts:

Direct habitat destruction

3.33 ha or 0.02% of the potential trophic habitats of the species in the zone are situated within the boundaries of direct impact. No nesting habitats will be impacted. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include three polygons of potential trophic grounds for the species, and the remaining part of one of these polygons will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 3.76 ha. or 0.02% of the potential habitats of the species in the area. No nesting habitats will be impacted. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. Generally, 0.26 ha or 0.06% of the potential nesting habitats of the species in the studied area are situated within the boundaries of potential impact (in the studied area). Generally, 12.57 ha or 0.08% of the potential trophic habitats of the species in the studied area are situated within the boundaries of potential impact (in the studied area). The impact will be **insignificant**.

Mortality

Nesting habitats of this species are present within the boundaries of potential impact - drilling and blasting noise. If drilling and blasting are carried out during the species' breeding period, the species may leave any near-by nests, losing eggs and/or young chicks. Should this happen, the impact on the species' population in the area will be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely. Both impacts can be eliminated with adequate measures (see *Accipiter brevipes*).

Measures:

No drilling and blasting should be carried out during the breeding period of this species (April 01 – July 30) at a distance of less than 800 m. from the rocks south of the IP area.

Phase: Operating.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A133 Stone-curlew (*Burhinus oedicephalus*)

Nesting-migratory and transitory species. Its spring migration takes place in April, and its autumn migration takes place in September-October. It inhabits steppe and plains near water

bodies: stony, sandy and clayey biotopes, abandoned meadows, low mountain slopes with rare shrub, dunes, wide sand-gravel banks and islands in and around larger rivers. The eggs are laid directly on the ground. The chicks hatch in late May and in June and fly in July. Some pairs lay a second clutch. This species feeds on large insects, snails, worms, lizards and small rodents. It is predominantly diurnal (Caccamo et al. 2011, Golemanski 2011, Nankinov et al. 1997, personal observations).

Evaluation of the species in the zone

There are 2 nesting pairs in the zone, according to the standard form. The potential habitats for the species in this zone are the dry grassy areas (habitat N09 according to the standard form) with an area in the zone of 5,319.5 ha. In fact, the surface area is smaller, given the specific requirements of this species.

Evaluation of the species in the studied region

This species was not found during the field studies. There are no potential habitats of this species are present in the studied area - the grassy habitats in the northern part of the area are small and away from larger water bodies.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

A087 Common buzzard (*Buteo buteo*)

This species nests in deciduous, mixed and coniferous forests with meadows, along the fringes of such forests, and in open areas with tree groups or single trees. Its nests are in trees, at a height of 6-20 m. The eggs are laid in May. Brooding is 28-33 days long. The chicks leave the nest at 40-49 days. It is a sedentary and migrating species feeding mainly on small rodents (mice, shrews, ground squirrels), some birds, and, rarely, on reptiles, amphibians and invertebrates. Frequently, it hunts in arable lands, but also in various grass and bush habitats, reeds, etc. (Simeonov et al. 1990, Yankov 2007, personal observations).

Evaluation of the species in the zone

There are 19 to 30 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are all forest massifs or groups of trees (habitats N16, N17 and N19 according to the standard form) with an area in the zone of 16,454.68 ha. All open habitat types in the zone can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N22), with a total area of 15,851.39 ha.

Evaluation of the species in the studied region

Registered multiple times in the studied region, most likely these are two pairs of the species, one of which is very likely to be nesting (grade 4 according to Simeonov and Michev, 1991) in the Tashlaka peak area, and one certainly nesting (grade 10) in the left-hand slope of Yuren Dere valley. The studied area includes some potential nesting habitats for this species - all forest types, including coniferous plantations. Also, some trophic grounds for the species exist in the region - broader grass and shrub habitats predominantly in the northern part of the studied area.

Impacts:

Direct habitat destruction

140.85 ha or 0.53% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. 2.52 ha or 0.02% of the feeding habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. **There will be virtually no** fragmentation of nesting habitats because this species nests also in groups of trees.

The direct impact boundaries include a portion of a polygon of potential feeding grounds for the species, and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 2.53 ha. or 0.02% of the potential habitats of the species in the area. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. 233.40 ha or 0.88% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 278.00 ha or 1.05% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise. Furthermore, this species is sensitive than other raptors.

4.62 ha or 0.03% of the potential trophic habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 9.89 ha or 0.06% of the potential trophic habitats of the species in the zone will be affected during the drilling and blasting operations.

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' numerous population in the area will be **significant**, given its relatively low numbers. This impact may be eliminated by suitable measures.

Mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely. Both impacts can be eliminated with adequate measures (see *Accipiter brevipes*).

Measures:

- Mine construction works should begin outside the species' breeding period (May 01 - August 15) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or chicks. Beginning work during this period is admissible only if an expert ornithologists carry out monitoring (at least 8 hours of stationary observation) and the species is not observed in less than 110 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A403 Long-Legged Buzzard (*Buteo rufinus*)

Sedentary, nesting and migrating, transient and wintering species. It occurs between sea level and mountains, up to approximately 1,500 m a.s.l. Its typical nesting habitats are warmer

areas - rocky gorges, open areas with southern exposure, etc. It makes its nests on rocks or in trees in spacious open areas where the birds hunt. Rarely, the long-legged buzzard nests in abandoned quarries and on power-line poles. Its nesting period begins in March. It lays its 3-4 eggs in March-April. Brooding is approximately 26 days long. The chicks leave the nest in around 42 days. The species feeds on various rodent species, and, in some areas, mainly ground squirrels, reptiles, amphibians and birds. This species hunts in open spaces, including arable lands (Golemanski 2011, Simeonov et al. 1990, Demerdzhiev et al. 2014).

Evaluation of the species in the zone

There are 4-5 nesting pairs in the zone, according to the standard form. According to the report from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the pairs are 3 or 4. The potential nesting habitats for the species in this zone are the rocky areas (habitat N22 according to the standard form) with an area in the zone of 410.57 ha. All open habitat types in the zone can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N22), with a total area of 15,851.39 ha.

Evaluation of the species in the studied region

This species was established only once, during migration. No potential nesting habitats of this species are present in the studied area - the rocks in the southern part are too low for the species. Some feeding grounds for the species exist in the region - broader grass and shrub habitats predominantly in the northern part of the studied area.

Impacts:

Direct habitat destruction

2.52 ha or 0.02% of the potential trophic habitats of the species in the zone are situated within the boundaries of direct impact. No nesting habitats will be impacted. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a portion of a polygon of potential feeding grounds for the species, and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 2.53 ha. or 0.02% of the potential habitats of the species in the area. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is more sensitive toward disturbance in its nesting habitats which are not present within the boundaries of potential impact. Generally, 6.13 ha or 0.04% of the potential trophic habitats of the species in the zone are situated within the boundaries of potential impact (in the studied area). No nesting habitats will be impacted. The impact will be **insignificant**.

Mortality

No nesting habitats of this species are present in the studied area. The prerequisites for nests with eggs or young poorly flying chicks are not present. **There will be no** mortality.

A224 European Nightjar (*Caprimulgus europaeus*)

A migratory species. Its distribution in Bulgaria is patchy, between the sea level and up to 1,800 m. a.s.l. In the mountains. It occupies rarefied and/or low-stem broad-leaved forests, rarely, mixed forests, and coniferous forests with meadows, clearings, or clusters of trees in open spaces, and hill slopes with bush vegetation. The mating flights occur between the last ten-day period of April and early June. The nest is a pit in the ground, often indistinguishable, and without bedding. The bird lays 2 eggs in May-June. Brooding is 17-21 days long. The chicks

leave their nest before they can fly, at 17 days old. The spring migration takes place in early May, and the autumn migration takes place between August and mid-October. The species feeds on insects which it catches in the air at night. It hunts in various habitats, including around street lights in urban areas (Nankinov et al. 1997, Jonsson 2006, personal observations).

Evaluation of the species in the zone

There are 136 to 326 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are the deciduous forests and shrubs (habitats N22 and N16 according to the standard form) with an area in the zone of 30274.72 ha. All habitat types (N06, N08, N09, N10, N12, N15, N16, N17, N19, N20, N21, N22, N23, or the entire zone) on an area of 44626.646 ha. should be regarded as trophic habitats in the zone.

Evaluation of the species in the studied region

This species was established both during its mating period and during migration. The studied area includes some potential nesting habitats for this species - all deciduous forest types and shrubs. The area includes trophic habitats of the species that cover entire studied region.

Impacts:

Direct habitat destruction

125.32 ha or 0.41% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. 146.15 ha or 0.33% of the trophic habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting and feeding grounds for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. 190.17 ha or 0.63% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 269.80 ha or 0.89% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise. Furthermore, this species is sensitive toward larger birds. **The impact will be insignificant.**

There will be no disturbance in the potential trophic habitats of this species in the zone because it hunts at night when no construction or mining will be carried out, and, what is more, this species hunts also in urban areas.

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area may be **significant**. This impact may be eliminated by suitable measures.

Measures:

- Mine construction works should begin outside the species' breeding period (May 01 - August 10) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A136 Little Ringed Plover (*Charadrius dubius*)

Nesting and migrating, transient and wintering species. Its spring-time migration starts between early March and mid-May while its autumn migration starts in the second half of July and lasts until late October. The species occurs around water bodies in the lower lands of the country, such as rivers, brooks, permanent fresh-water lakes, marshes, standing water bodies, channels, etc. and nests adjacent to the water on gravelly beaches, sand bars, islands, dunes, etc. Pairs form in late March. The nests are built in April. The chicks hatch in late May. The species feeds on beetles and beetle larvae, caddis-fly larvae, worms, small clams, seeds etc. (Golemanski 2011, Nankinov et al. 1997, personal observations).

Evaluation of the species in the zone

There are 12 to 24 nesting pairs in the zone, according to the standard form. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

The species was found along the Byala river flow. Outside the boundary of potential impact. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

A031 White stork (*Ciconia ciconia*)

White storks are synanthropic species - they nest in urban areas (excluding the central parts of larger cities) on electric poles, chimneys, bell towers, and larger trees. During breeding and migration, white storks inhabit natural and man-made wetlands, mires, swamps, meadows, pastures, arable lands (alfalfa fields, rice paddies, ploughed up areas) along channels. They feed on frogs and their larvae, lizards, snakes, fish, aquatic insects, grasshoppers, grubs, worms, rodents, and young birds. Breeding starts in early April and lasts until late July or early August. The chicks are nidicolous. Migration happens between early May and mid April, and between early August and late September (Simeonov et al. 1990, Simeonov & Michev 1991, Jonsson 2006, personal observations).

Evaluation of the species in the zone

There are 5 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are the urban areas (habitat N23 according to the standard form) with an area in the zone of 865.83 ha. All grass habitat types, arable lands and water bodies can be regarded as trophic habitats in the zone (codes N06, N09, N10, N12, N15), with a total area of 10,531.89 ha.

Evaluation of the species in the studied region

This species was not found during the field studies in the Gugutka village, outside the studied area. No potential nesting habitats - urban areas - for this species are present in the studied area. Some trophic habitats for the species exist in the region - broader grass habitats (6210), predominantly in the northern part of the studied area.

Impacts:

Direct habitat destruction

12.52 ha or 0.01% of the potential trophic habitats of the species in the zone are situated within the boundaries of direct impact. No nesting habitats will be impacted. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a portion of a polygon of potential feeding grounds for the species, and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 1.61 ha. or 0.01% of the potential habitats of the species in the area. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is less sensitive toward disturbance in its nesting habitats which are not present within the boundaries of potential impact. This species is not sensitive in its trophic habitats - it hunts even in locations with increased anthropogenic presence. **There will be no** impact.

Mortality

No nesting habitats of this species are present in the studied area. The prerequisites for nests with eggs or young poorly flying chicks are not present. **There will be no** mortality.

A030 Black Stork (*Ciconia nigra*)

A migratory species. This species occurs from the sea level to around 1,600 m. a.s.l. It inhabits different forest types - riparian, deciduous, plain and mountainous, and vertical rock massifs. These areas are always near water bodies (rivers, dam lakes, fish farms etc.) where abundant food for this species is available. The nests are situated on rocks or in trees. It is typical of these two nesting types that the nests on rocks are, usually, easily visible and frequently close to human activity, while the pairs nesting in the forests are far more cautious and choose areas which are visited rarely by humans. The nesting period begins in April. The species lays 2-5 eggs in May, but most often the eggs are 2, and brooding lasts for 35-38 days. The chicks leave the nest in around 63-71 days. This species feeds almost entirely on aquatic animals such as fish, amphibians, and reptiles (Golemanski 2011, Simeonov et al. 1990, personal data).

Evaluation of the species in the zone

There are 6 to 18 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are all deciduous forests and rock habitats (habitats N16 and N22 according to the standard form) with an area in the zone of 25,365.79 ha. All water bodies and wet and mesophytic grassy locations (codes N06 and N10) in the zone can be regarded as trophic habitats, with a total area of

Evaluation of the species in the studied region

In 2017, one pair was sighted in among the rocky outcrops in the south western part of the studied region (very likely nesting, grade 4 – demonstrating occupied nesting area at several days' interval). Perhaps the same pair had moved during the breeding season of 2019 on the right-hand slope above the Yuren Dere valley (certain nesting - degree 12 - voices of non-flying chicks). The species was registered many times in the region. The IP includes nesting habitats – in the forest around the Yuren Dere valley where large, old trees have remained, and in the rocky outcrops in the south western part of the studied region. Its main feeding habitat is the Byala River valley. The studied area includes some potential nesting habitats for this species - all deciduous forest types and the rocks. No trophic habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation.

Impacts:

Direct habitat destruction

112.12 ha or 0.44% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. No trophic habitats will be impacted. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. There will be **insignificant** fragmentation. No trophic habitats will be impacted.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive toward disturbance, including in its trophic habitats. 188.51 ha or 0.74% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 245.82 ha or 0.97% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise. **The impact will be insignificant.**

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area will be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely. Both impacts can be eliminated with adequate measures (see *Accipiter brevipes*).

Measures:

- Mine construction works should begin outside the species' breeding period (May 01 - August 15) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or chicks. Beginning work during this period is

admissible only if an expert ornithologists carry out monitoring (at least 8 hours of stationary observation) and the species is not observed in less than 110 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A080 Short-Toed Snake Eagle (*Circaetus gallicus*)

A migratory species. Its spring migration takes place in March, and its autumn migration takes place between the second half of August and until late October. Occurs mainly in sub-montane and low mountain regions and, rarely, around 1,400 m. a.s.l. It nests in old open deciduous and, less often, in coniferous forests near dry uncultivated lands, eroded slopes, pastures, meadows, rocky areas, and farm lands. The breeding period begins in late April. The nest is made in woods, at a height of 6 to 10 m.. The bird lays 1-2 eggs in May. It broods during the second half of May for 45-47 days. The chicks leave the nest at 70-75 days of age, or during the first half of August. During migration it occurs in open arable lands with single trees. Feeds almost entirely on snakes, lizards and frogs and, rarely, on small mammals and insects (Simeonov et al. 1990).

Evaluation of the species in the zone

There are 9 to 11 nesting pairs in the zone, according to the standard form. According to the report from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), the pairs are 7-9. The potential nesting habitats for the species in this zone are all deciduous forests (habitat N06 according to the standard form) with an area in the zone of 24,955.22 ha. All open habitat types in the zone can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N22), with a total area of 15,851.39 ha.

Evaluation of the species in the studied region

One individual was observed during the field studies in 2017 in the Kokardjadere area - potentially nesting (degree 1). The species was established during migration. The studied area includes some potential nesting habitats for this species - all deciduous forest and shrubland. - broader grass and shrub habitats predominantly in the northern part of the studied area.

Impacts:

Direct habitat destruction

112.12 ha or 0.45% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. 2.52 ha or 0.02% of the feeding habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. There will be **insignificant** fragmentation.

The direct impact boundaries include a portion of a polygon of potential feeding grounds for the species, and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 2.53 ha. or 0.02% of the potential habitats of the species in the area. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. 188.51 ha or 0.76% of the potential nesting habitats of the species in the zone will be situated within the boundaries of

potential impact during construction and normal operation. 245.82 ha or 0.99% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise.

4.62 ha or 0.03% of the potential trophic habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 9.89 ha or 0.06% of the potential trophic habitats of the species in the zone will be affected during the drilling and blasting operations.

There will be **insignificant** impact on both habitat types.

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area will be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely. Both impacts can be eliminated with adequate measures (see *Accipiter brevipes*).

Measures:

- Mine construction works should begin outside the species' breeding period (May 01 - August 15) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or chicks. Beginning work during this period is admissible only if an expert ornithologists carry out monitoring (at least 8 hours of stationary observation) and the species is not observed in less than 110 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A084 Montagu's harrier (*Circus pygargus*)

A migratory species. It inhabits wet and marshy meadows, quagmires, swamps, river banks and, also, more spacious dry grassy lands, pastures, and arable areas. It nests on the ground, on wet meadows or among reeds, not far from water. The eggs are laid in the first half of May. Brooding is 27-30 days long. The chicks start flying at 28-35 days of age. It feeds on small mammals, poorly-flying birds, lizards, frogs, and insects (Simeonov et al. 1990, personal observations).

Evaluation of the species in the zone

There is 1 nesting pair in the zone, according to the standard form. The potential nesting habitats of the species in the zone are the wet grassy locations and the arable areas (code habitats N10 and N12 according to the standard form), with an area in the zone of 4,391.26 ha. All types of grassy and arable areas (codes N09, N10, N12, N15) in the zone can be regarded as trophic habitats, with a total area of 10,121.32 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. No potential nesting habitats for this species are present in the studied area. The region includes some trophic habitats of this species - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly.

Impacts:

Direct habitat destruction

No nesting or trophic habitats of this species are present in the directly impacted area.

There will be no direct habitat destruction.

Habitat fragmentation

No nesting or trophic habitats of this species are present in the directly impacted area.

There will be no habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is more sensitive toward disturbance in its nesting habitats which are not present within the boundaries of potential impact. Generally, 0.387 ha or 0.004% of the potential trophic habitats of the species in the studied area are situated within the boundaries of potential impact (in the studied area). No nesting habitats will be impacted. The impact will be **insignificant**.

Mortality

No nesting habitats of this species are present in the studied area. The prerequisites for nests with eggs or young poorly flying chicks are not present. **There will be no** mortality.

A231 European roller (*Coracias garrulus*)

Nesting-migratory and transitory species. Inhabits open fields and arable lands with single old trees, with riparian forests, and with earth or rocky banks in which it nests. It nests in tree hollows, holes in earth banks and, rarely, in rock crevices. Its breeding period is highly stretched, between late May and mid-June. A migratory species. Its spring-time migration is between the second half of April and late May, and the autumn migration is between end of July and the second half of September. The species feeds on insects, worms, small frogs etc., and hunts in open areas (Nankinov et al. 1997, Jonsson 2006, personal observations).

Evaluation of the species in the zone

There are 6-9 nesting pairs in the zone, according to the standard form. All types of grassy and arable areas (codes N09, N10, N12, N15) in the zone can be regarded as potential habitats of this species, with a total area of 10,121.32 ha.

Evaluation of the species in the studied region

This species was registered only once during the breeding season, south of Rozino village. The studied area includes some potential habitats of this species - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no** direct habitat destruction.

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no** habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is less sensitive to disturbance as compared to larger species, including in its nesting habitats. 0.39 ha or 0.004% of the potential habitats of the species in the zone are situated within the boundaries of potential impact. There will be **insignificant** impact, if any.

Mortality

There are nesting habitats of this species in the studied area, but will not directly impacted. The prerequisites for nests with eggs or young poorly flying chicks are not present. This species is less sensitive to disturbance as compared to larger species, including in its nesting habitats. **There will be no mortality.**

A239 White-backed woodpecker (*Dendrocopos leucotos*)

Sedentary species. Occurs in various mountains in Bulgaria, at elevations of up to 1,700 m a.s.l. - the Central and Western Stara Planina mountain, Sredna gora, Rila, Pirin, the Western Rhodopes, Strandja, and in a few other isolated localities. The nesting colony of the pair in climax forests is 100-150 ha and is constant. This species inhabits old oak forests, oak-coniferous forests and more moist oak forests at elevations of up to 1,700 m. a.s.l., with more dead and dying trees in windthrow or snowbreak areas. It lays eggs in April-May. The bird nests in tree hollows it excavates itself and lays 3-7 eggs. Brooding is 14 -16 days long. The chicks leave the nest in around 27-28 days. Feeds 90% on xylophagous insects and their larvae (Golemanski 2011, Nankinow et al. 1997, personal observations).

Evaluation of the species in the zone

There are 15-19 nesting pairs in the zone, according to the standard form. This species had not been sighted during the studies under the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022). Its population in 2007 was estimated at 1 -2 pairs. A part of the deciduous forests (habitat N16 according to the standard form) can be regarded as potential habitats for the species in the zone, but owing to the species' specific requirements, the size of these habitats is unknown.

Evaluation of the species in the studied region

The species was not found in the area. No potential habitats of this species are present in the studied area - the forests in the area, including the older forests along the Yuren Dere valley, are too dry, with insufficient quantities of dead wood.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

A238 Middle spotted woodpecker (*Dendrocopos medius*)

Sedentary species. Inhabits exclusively vast massifs of old-growth deciduous forests, from oak-hornbeam to oak and, less often, old-growth riparian forests in the oak-hornbeam belt. It nests in hollows it digs in deciduous trees. The mating behaviour is observed between late February and late April. The breeding period begins in April. The bird lays 4 to 7 eggs in April-May. Brooding is 12-14 days long. The chicks leave the nest at 20-25 days of age. It occurs in lowland forests and spacious parks in the winter. The species feeds on insects such as beetles, ants, etc., and their larvae, as well as other arthropods, seeking them predominantly under the bark of old and/or decaying wood. In winter it feeds more on seeds and other plants (Nankinov et al. 1997, BirdLife International 2016, Jonsson 2006).

Evaluation of the species in the zone

There are 100-150 nesting pairs in the zone, according to the standard form. The potential habitats for the species in this zone are all deciduous forests (habitat N06 according to the standard form) with an area in the zone of 24,955.22 ha.

Evaluation of the species in the studied region

This species was established several times in the forest along the right-hand side slope of the Yuren Dere valley, where two pairs may be nesting. The studied area includes potential habitats of this species - all deciduous forests, especially the forest around Yuren Dere.

Impacts:

Direct habitat destruction

112.12 ha or 0.45% of the potential habitats of the species in the zone are situated within the boundaries of direct impact. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

188.51 ha or 0.76% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 245.82 ha or 0.99% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise. Furthermore, this species is sensitive toward larger birds. **The impact will be insignificant.**

Mortality

Nesting habitats of this species are present in the IP. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area may be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Measures:

- Mine construction works should begin outside the species' breeding period (April 01 - July 10) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or Beginning work during this period is admissible only if an expert ornithologists carry out advance monitoring in the area (up to 2-3 days beforehand, at least along 3 transects along Yuren Dere and the ridges to the north and south of it, with auditory provocation every 400 m.) and the species is not observed in less than 300 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A429 Syrian woodpecker (*Dendrocopos syriacus*)

Sedentary species. This species is widespread both horizontally and vertically throughout Bulgaria, from the sea level to around 1,700 m. in mountains. It is one of the most common woodpecker species in Bulgaria. It inhabits parks and gardens in urban areas and in large cities, riparian forests, groups of trees in open areas, road-side plantations, windbreak strips, etc., and

nests much more rarely in broad-leaved deciduous forest edges (if they are not thick and vast). The breeding period begins in April. The bird nests in tree hollows it excavates itself. Four to seven eggs are laid. Brooding is approximately 12 days long. The chicks leave the nest in around 25 days. The species feeds on various insects and their larvae, and on seeds and fruits (MOEW 2022, Nankinov et al. 1997, personal observations).

Evaluation of the species in the zone

There are 200 to 350 nesting pairs in the zone, according to the standard form. The potential habitats of the species in the zone are the plantations and orchards, as well as urban areas (code habitats N20, N21 and N23 according to the standard form), with an area in the zone of 1,910.02 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. No potential habitats of this species are present in the studied area where there are closed-canopy vast forests which it avoids.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

Black woodpecker (*Dryocopus martius*)

A permanent species wandering during the autumn-winter period. It occurs in Bulgaria between the sea level and the upper forest belt, but mainly in the mountains. This species occurs more frequently in the Stara Planina mountain, in Sredna gora, Rila, Pirin, the Rhodopes, in lowland forests in the Ludogorie area, along the Danube, etc., inhabiting old mountain oak, mixed and coniferous forests and, less frequently, low-mountain and lowland forests, occasionally nesting in urban parks with old trees. The pairs occupy around 300 ha in old coniferous forests, 400 ha in beech forests and 500-600 ha in oak forests. The occupied sections in forests with few dying and large trees are 1,000 - 1,600 ha. The breeding period begins from mid-February and lasts until mid-March. Its nests are in large elliptical tree hollows it digs itself into the trunks of trees with a diameter of more than 40 cm., at 4 m. above the ground, or uses old nesting chambers and overnight hollows. It lays 3-6 eggs in April May. Brooding is 12-14 days long. The chicks leave the nest in around 24-31 days. The species nests again if the clutch is lost. It occurs in lowland forests and spacious parks in the winter. The species feeds on eggs, larvae and adult bark beetles, wood borers, weevils, stag beetles, ants, etc. and, less often, on the seeds of various deciduous and coniferous trees (Golemanski 2011, Nankinov et al. 1997).

Evaluation of the species in the zone

There are 9 to 21 nesting pairs in the zone, according to the standard form. All forests can be regarded as potential habitats of this species (habitats with codes N16, N17, and N19 according to the standard form), with an area in the zone of 26,454.68 ha.

Evaluation of the species in the studied region

This species was sighted several times in the Yuren Dere valley, including in its upper part where two pairs are seemed to nest. The studied area includes potential habitats of this species - all forests, including the coniferous plantations, and especially the forest around Yuren Dere.

Impacts:

Direct habitat destruction

140.85 ha or 0.53% of the potential habitats of the species in the zone are situated within the boundaries of direct impact. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance. 233.40 ha or 0.88% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 278.00 ha or 1.05% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise. Furthermore, this species is sensitive toward larger birds. **The impact will be insignificant.**

Mortality

Nesting habitats of this species are present in the IP. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area may be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Measures:

- Mine construction works should begin outside the species' breeding period (April 01 - June 10) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or Beginning work during this period is admissible only if an expert ornithologists carry out advance monitoring in the area (up to 2-3 days beforehand, at least along 3 transects along Yuren Dere and the ridges to the north and south of it, with auditory provocation every 400 m.) and the species is not observed in less than 300 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A027 Great egret (*Egretta alba*)

Nesting and migrating, transient and wintering species. As of 1956, this species has been nesting regularly only in the Srebarna lake reserve. Occasionally individual pairs nest also in the Burgas lakes. This species occurs during migration and in winter along the Black Sea coastline and, less often, in the lower inland areas of Bulgaria. It inhabits freshwater lakes and swamps, dam lakes, fish farms and fish-breeding facilities. During migration and wintering it occurs also in coastal brackish water bodies, non-freezing dam lakes, irrigation channels, arable lands etc. It feeds mainly on fish, tadpoles, and aquatic insects and their larvae (Golemanski 2011).

Evaluation of the species in the zone

No information about the population density in the zone is present in the standard form. This species is noted as represented (P) during migration. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A026 Little egret (*Egretta garzetta*)

A nesting and migrating, transient and, by exception, wintering species. It inhabits freshwater lakes and swamps, inundated forests and oak forests, dam lakes, fish farms and fish-breeding facilities. During migration and in winter it occurs also in coastal brackish water bodies, dam lakes, and irrigation channels (Golemanski 2011)

Evaluation of the species in the zone

No information about the population density in the zone is present in the standard form. This species is noted as represented (P) during migration. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A379 Ortolan bunting (*Emberiza hortulana*)

Inhabits pastures and other open grasslands with shrub and highly rarefied clusters of trees, arable lands with intervening field division strips and shrub, and orchards. Nests on the ground at the base of bushes or trees. The species lays eggs in May-June. The chicks hatch after 11 - 12 days and leave the nest after 12 - 13 days, but cannot fly well. They become independent after a few more weeks. A migratory species. Its spring migration is between late March and early May, and the autumn migration is in August and September. The species feeds on invertebrates (the chicks' only food) and seeds, which it gathers on the ground and, also, in roots of trees and bushes (Ivanov 2011, Stoyanov and Donchev 2013).

Evaluation of the species in the zone

There are 67 to 194 nesting pairs in the zone, according to the standard form. The grassland habitats, the arable lands and the orchards can be regarded as potential habitats of this species (habitats with codes N09, N10, N12, N15, and N21 according to the standard form), with an area in the zone of 10,978.155 ha.

Evaluation of the species in the studied region

The studied area includes some potential habitats of this species - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no** direct habitat destruction.

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no** habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is less sensitive to disturbance as compared to larger species, including in its nesting habitats. 0.39 ha or 0.004% of the potential habitats of the species in the zone are situated within the boundaries of potential impact. There will be **insignificant** impact, if any.

Mortality

There are nesting habitats of this species in the studied area, but will not directly impacted. The prerequisites for nests with eggs or young poorly flying chicks are not present. This species is less sensitive to disturbance as compared to larger species, including in its nesting habitats. **There will be no** mortality.

A095 Lesser kestrel (*Falco naumanni*)

Nesting-migratory and transitory species. A species with numerous colonies in the past, especially in urban areas in Southern Bulgaria. No nests are known and in 2005 only singular pairs have, most likely, been observed. This species migrates in unknown numbers throughout Bulgaria, and following the year 2000, mainly along the Black Sea coastline and, possibly, in Southern Bulgaria. It occurs in areas with lower altitudes, mainly between the sea level and up to about 500 m a.s.l., inhabiting steppe and steppe-like grasslands and extensive arable lands in plains where it hunts. A colonial species nesting in niches and crevices in rocky and earth banks, platforms or hollow areas in buildings (incl. houses in villages and towns) or old trees, and in old nests of corvids or raptors. The bird lays 4 to 5 eggs in May. Brooding is approximately 28 days long. The chicks leave the nest in around 28 days. It migrates from mid-March to early May and from early August to mid-October. The species feeds on insects, rodents, small reptiles etc. (Golemanski 2011, Simeonov et al. 1990, BirdLife International 2001, Handrinos and Akriotis 1997, Iñigo and Barov 2010, personal observations).

Evaluation of the species in the zone

There is 1 nesting pair in the zone, according to the standard form. This species had not been sighted during the studies under the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), but it should be noted that perhaps it is extinct in the region and that the standard form should be updated. All steppe-like grasslands and arable areas, and the urban areas (codes N09, N12, N15, N23) in the zone can be regarded as potential habitats of this species, with a total area of 10,567.59 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. The studied area includes some potential habitats of this species - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly. No nesting microhabitats are present.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no** direct habitat destruction.

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no** habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is less sensitive to disturbance, including in its nesting habitats, some of which are in urban areas. 0.39 ha or 0.004% of the potential habitats of the species in the zone are situated within the boundaries of potential impact. The impact will be **insignificant**.

Mortality

There are trophic habitats of this species in the studied area, but will not directly impacted. The prerequisites for nests with eggs or young poorly flying chicks are not present. This species is less sensitive to disturbance, including in its nesting habitats. **There will be no** mortality.

A103 Peregrine falcon (*Falco peregrinus*)

A wandering species. In Bulgaria it nests on rocks in gorges, defiles and other rocky terrains near open areas. The species lays eggs in March. The eggs hatch in around 30 days, or in April. The chicks leave the nest at 32-45 days of age, or in late May, at the latest. During its wandering and wintering, it occurs in various habitats with congregations of birds, which are its main food, in open areas, wetlands, urban areas, and industrial facilities (bread making plants, silos). It feeds on wild and, especially in winter, domesticated pigeons, corvids, starlings, sky larks, thrushes, and, also, larger species such as ducks and partridges which it catches in the air (Simeonov et al. 1990, Jonsson 2006, Ragyov et al. 2007, Ragyov et al. 2008; personal observations).

Evaluation of the species in the zone

There are 2 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are the rocky areas (habitat N22 according to the standard form) with an area in the zone of 410.57 ha. All habitat types, except for the forest types, (N06, N08, N09, N10, N12, N15, N21, N22, N23) on an area of 17,975.613 ha. should be regarded as feeding habitats in the zone.

Evaluation of the species in the studied region

This species was not found during the field studies. No potential nesting habitats of this species are present in the studied area - the rocks in the southern part are too low for the species. All open habitat types in the area, such as grassy, shrubby and rocky habitats, should be regarded as trophic habitats.

Impacts:

Direct habitat destruction

3.33 ha or 0.02% of the potential trophic habitats of the species in the zone are situated within the boundaries of direct impact. No nesting habitats will be impacted. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include four polygons of potential complete or partial trophic grounds for the species, and the remaining part of one of these polygons will be of sufficient size to preserve its characteristics as a habitat for the species which hunts on the wing. **There will be no fragmentation.**

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no barrier effect.**

Disturbance

This species is more sensitive toward disturbance in its nesting habitats which are not present within the boundaries of potential impact. 12.57 ha, or 0.07% of the potential trophic habitats of the species in the zone are situated here. No nesting habitats will be impacted. The impact will be **insignificant**.

Mortality

No nesting habitats of this species are present in the studied area. The prerequisites for nests with eggs or young poorly flying chicks are not present. **There will be no mortality.**

A099 Eurasian hobby (*Falco subbuteo*)

It inhabits rare, open deciduous, mixed and coniferous woodlands with meadows, close to pastures, meadows, arable lands and other open spaces, small river-edge forests, fields with hedges, and clumps of trees. Uses old nests of other birds, mainly corvids. It nests rarely on high-voltage pylons and rocks. The species lays eggs in May. Brooding is 28 days long. The chicks leave the nest at around 30 days of age. A migratory species. Its spring-time migration starts between early April and mid-May while its autumn migration starts in the second decade of August and lasts until late October. The species feeds mainly on small birds and large insects which it catches in the air and, rarely, on bats, small terrestrial mammals and reptiles (Golemanski 2011, Simeonov et al. 1990, Simeonov & Michev 2006, personal observations).

Evaluation of the species in the zone

There are 7 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are all forest massifs or groups of trees (habitats N16, N17 and N19 according to the standard form) with an area in the zone of 16,454.68 ha. The open areas and farmlands in the zone can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N21, N22), with a total area of 16,708.22 ha.

Evaluation of the species in the studied region

This bird was observed above the Kokardja Dere and Byala Reka rivers and may be nesting (level 1) in the area of confluence of these two rivers, outside the studied area. Potential nesting habitats of this species are situated in the studied area, comprising all forest types, including coniferous plantations, although having a denser canopy, these habitats should be considered sub-optimal. Also, some trophic grounds for the species exist in the region - broader grass and shrub habitats predominantly in the northern part of the studied area.

Impacts:

Direct habitat destruction

140.85 ha or 0.53% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. 2.52 ha or 0.02% of the feeding habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. **There will be virtually no** fragmentation since this species nests also in groups of trees and hunts on the wing.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. 233.40 ha or 0.88% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 278.00 ha or 1.05% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise. Furthermore, the nesting habitats in the studied area are sub-optimal.

4.62 ha or 0.03% of the potential trophic habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 9.89 ha or 0.06% of the potential trophic habitats of the species in the zone will be affected during the drilling and blasting operations.

There will be **insignificant** impact on both habitat types.

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' numerous population in the area will be **significant**, given its relatively low numbers. This impact may be eliminated by suitable measures.

Measures:

- Mine construction works should begin outside the species' breeding period (May 01 - July 20) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or chicks. Beginning work during this period is admissible only if an expert ornithologists carry out monitoring (at least 8 hours of stationary observation) and the species is not observed in less than 300 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A096 Common kestrel (*Falco tinnunculus*)

Sedentary, wandering and migrating species. This species together with the common buzzard is the most frequently sighted raptor in Bulgaria. It is widespread both horizontally and vertically, between the sea level and the high-mountain treeless zone. This species inhabits open areas, such as rocky and karst areas, pasturelands, river valleys, rarefied forest edges, clusters of trees, shrubs, arable areas, and urban areas, including large cities. It nests on vertical rocks and earth slopes, power-line pylons, buildings, silos, etc., but does not build its own nests and uses other birds' nests instead, most often those of corvids, or nests directly on the substrate in niches in rocks, buildings etc. Its mating period begins in April. The bird lays 4 -6 eggs in April-May.

Brooding is 28-31 days long. The chicks spend approximately 28-39 days in the nest. Migratory and sedentary species. Its spring migration takes place in March, and its autumn migration takes place in September-October. The species feeds on mouse-like rodents, large insects, reptiles - predominantly lizards, small birds etc. (Simeonov et al. 1990, personal observations).

Evaluation of the species in the zone

There are 18 nesting pairs in the zone, according to the standard form. All types of steppe-like grasslands, arable areas and rocks (codes N09, N12, N15, N22) in the zone can be regarded as potential habitats of this species, with a total area of 10,121.32 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. A small area of potential habitats of the species is situated in the studied area - the open areas around Rozino village and the rocks in the western part of the studied area, outside the IP elements, which will not be directly affected.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no** direct habitat destruction.

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no** habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is not sensitive to disturbance, including in its nesting habitats - some of its nests large towns. **There will be no** impact.

Mortality

There are nesting habitats of this species in the studied area, but will not directly impacted. The prerequisites for nests with eggs or young poorly flying chicks are not present. This species is not sensitive to disturbance, including in its nesting habitats. **There will be no** mortality.

A097 Red-footed falcon (*Falco vespertinus*)

This species inhabits open areas and arable lands with single trees and small groves, rarefied forests with large meadows, pasture lands, meadows, often adjacent to wetlands. It feeds on small mouse-like rodents and shrews, insects, predominantly orthopterans and coleopterans, but also dragon flies, lizards and, during its breeding period, young birds and frogs. Often it hunts in fallow lands or stubble. Its spring-time migration occurs in April-May, and its autumn migration is between late August and October (Simeonov et al. 1990, Jonsson 2006, personal observations).

Evaluation of the species in the zone

According to the standard form, this species does not nest in the zone. It is represented (P) during migration. All types of steppe-like grasslands and arable areas (codes N12, N15, N22) in the zone can be regarded as potential habitats of this species with a total area of 9,710.76 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. A small area of potential habitats of this species is situated in the studied area - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no** direct habitat destruction.

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no** habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is more sensitive to disturbance in its nesting habitats, but occurs in the zone only during migration. 0.387 ha or 0.004% of the potential habitats of the species in the zone are situated within the boundaries of potential impact. The impact will be **insignificant**.

Mortality

This species does not nest in the zone. The prerequisites for nests with eggs or young poorly flying chicks are not present. **There will be no** mortality.

A100 Eleonora's falcon (*Falco eleonora*)

A non-nesting summer-time visitor in Bulgaria. It breeds in colonies on steep rocky sea coastlines and islands between mid July and August - September, utilizing the autumn migration of songbirds in search of food. It may wander far from the colony prior to breeding. It occurs during its wanders in rocky and eroded terrains, open areas and, sometimes, farther inland. It feeds mainly on large insects and song birds which it catches on the wing (Del Hoyo et al. 1994, Michev et al. 2012, Simeonov et al. 1990).

Evaluation of the species in the zone

This species is not included in the standard form. It has been observed during the studies under the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) as residing during the nesting season (during summer-time wanderings) without its numbers being mentioned. All types of steppe-like grasslands and arable areas (codes N12, N15, N22) in the zone can be regarded as potential habitats of this species with a total area of 9,710.76 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. A small area of potential habitats of this species is situated in the studied area - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no** direct habitat destruction.

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no** habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is more sensitive to disturbance in its nesting habitats, but occurs in the zone only when wandering. 0.387 ha or 0.004% of the potential habitats of the species in the zone are situated within the boundaries of potential impact. The impact will be **insignificant**.

Mortality

This species does not nest in the zone. The prerequisites for nests with eggs or young poorly flying chicks are not present. **There will be no mortality.**

A442 Semi-collared flycatcher (*Ficedula semitorquata*)

This species inhabits predominantly natural deciduous and mixed forests, riparian forests and, more rarely, old orchards, tree plantations, the outskirts of smaller urban areas with tree vegetation in the low-land and low-mountain belts. It makes its nest in tree hollows (including artificial nest boxes), usually at a height of 3-6 m. The species lays eggs in May. The female broods for 12 - 14 days. Two clutches are possible. The chicks leave the nest at 15 days of age. A migratory species. The spring migration occurs during the first half of April and the autumn migration occurs between July and September. It feeds on insects which it catches on the wing, prowling on a branch or another convenient place (Golemanski 2011, Michev et al. 2012, BirdLife International 2012, Georgiev and Iankov 2009, Pearson and Lack. 1992).

Evaluation of the species in the zone

There are 2 to 25 nesting pairs in the zone, according to the standard form. A part of the deciduous forests (habitat N16 according to the standard form) can be regarded as potential habitats for the species in the zone, but owing to the species' specific requirements, the size of these habitats is unknown.

Evaluation of the species in the studied region

The species was not found in the area. No potential habitats of this species are present in the studied area - the forests in the area, including the older forests along the Yuren Dere valley, are too dry, and this species prefers more mesophile habitats.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

A125 Coot (*Fulica atra*)

This species inhabits fresh-water and semi-saline, natural and artificial water bodies of average and large size, and the sea coastline. Its breeding period lasts from the first half of April to early August, with two regular broods. Its migration is between February-March and August-early October. This species feeds on insects, crustaceans, small molluscs, and aquatic plants (Simeonov et al. 1990).

Evaluation of the species in the zone

According to the standard form, this species is represented (P) in the zone during migration. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation and unsuitable for nesting and without riparian vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A123 Moorhen (*Gallinula chloropus*)

This species inhabits wetlands of varying nature and size, including man-made lakes in parks. It breeds between April and August. The bird broods twice each year. Its migration is in March and early April, and in early November. This species feeds on insects and their larvae, small snails, and aquatic plants (Simeonov et al. 1990, personal observations).

Evaluation of the species in the zone

There are 1 to 5 nesting pairs in the zone, according to the standard form. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation and unsuitable for nesting and without riparian vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

A127 Common crane (*Grus grus*)

Presently a migrating and rarely wintering species which had nested along the Danube banks and in inland swamps at the end of the XIX century. It is a land-nesting species. It inhabits spacious plain areas near water bodies, swamps in pre-mountain and mountain areas, meadows and fens. During migration it occurs on meadows, fallow lands, fields, rice paddies, river floodplains etc. This species is conservative as regards its migration staging areas (Golemanski 2011).

Evaluation of the species in the zone

According to the standard form, up to 20 individuals pass through the zone during migration. The potential nesting habitats of the species in the zone are all water impoundments, the wet grasslands and the arable areas (code habitats N06, N10 and N12 according to the standard form), with an area in the zone of 4,801.83 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation and the grasslands and arable lands are dry and small in size.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A127 Griffon vulture (*Gyps fulvus*)

Sedentary and wandering species. It nests on cliffs in rocky areas in the valleys of large rivers (gorges, canyons), individually or in colonies. It lays eggs in January - February. The

chicks leave the nest between mid July and mid August. The species feeds on the carcasses of large mammals and is dependent on free-ranging livestock (Golemanski 2011, Simeonov et al. 1990).

Evaluation of the species in the zone

The zone is occupied by 35 individuals, according to the standard form. Eight individuals have been sighted during the studies under the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), but it should be noted that it visits the region in search of food.

Evaluation of the species in the studied region

This species was sighted several times in the studied area. In all cases it was the case of birds seeking food. There are no suitable nesting habitats in the region with its high, inaccessible rocky complexes near open areas. This species does not nest in the zone. A strict scavenger, this species is trophically linked to large ungulates on whose carcasses it feeds (mainly livestock, nowadays), and, therefore, it does not rely on a certain habitat type, especially since it is being artificially fed (on a feeding pad near Madjarovo).

Impacts:

This species does not nest in the zone. The prerequisites for nests with eggs or young poorly flying chicks are not present in the IP area. This species is trophically linked to large ungulates on whose carcasses it feeds (mainly livestock, nowadays), and, therefore, it does not rely on a certain habitat type, especially since it is being artificially fed (on a feeding pad near Madjarovo). **There will be and no impacts** on this species and its habitats.

A075 White-tailed eagle (*Haliaeetus albicilla*)

Sedentary species with predominantly younger birds from further north overwintering. It inhabits the sea coastline, rivers and lakes, rich in fish and water fowl, with high trees which are convenient for nesting. During the winter it inhabits also areas around man-made water impoundments - dam lakes, fish farms etc.

Evaluation of the species in the zone

According to the standard form, this species does not nest in the zone. It is a very rare (V) species here, occurring during migration. The larger water impoundments (habitat N06 according to the standard form) can be regarded as potential habitats for the species in the zone, but owing to the species' specific requirements, the size of these habitats is unknown.

Evaluation of the species in the studied region

This species was not found during the field studies. No potential habitats of this species are present in the studied area - the rivers and streams in the region are too shallow.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A093 Bonelli's eagle (*Hieraaetus fasciatus*)

Rare, sedentary and wandering species. Nowadays it is rarely assumed that this species nests in the Eastern and Central Rhodopes, and also in the Southern Pirin mountain, Slavyanka, Belasitsa and in the Frangensko and Provadisko plateaus. Individual birds have been observed during the Black Sea coastline outside of the nesting period. Inhabits dry craggy areas with

broad-leaved rarefied forests and river valleys. Nests on cliffs. Highly territorial. Predominantly ornithophagic (Golemanski 2011).

Evaluation of the species in the zone

According to the standard form, this species does not nest in the zone. Individuals occur during wandering and migration. This species had not been sighted during the studies under the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), but it should be noted that it is not known to have been nesting during the recent years. Some potential nesting habitats for the species in this zone are the rocky areas (habitat N22 according to the standard form) with an area of 410.57 ha. All types of steppe-like grasslands and arable areas (codes N12, N15, N22) can be regarded as trophic habitats of this species with a total area of 9,710.76 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. A small area of potential trophic habitats of this species is situated in the studied area - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly. No nesting habitats are present - the rocks in the southern part are too low for the species.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no** direct habitat destruction.

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no** habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is more sensitive toward disturbance in its nesting habitats which are not present within the boundaries of potential impact. 0.387 ha, or 0.004% of the potential trophic habitats of the species in the zone are situated here. The impact will be **insignificant**.

Mortality

No nesting habitats of this species are present in the studied area. The prerequisites for nests with eggs or young poorly flying chicks are not present. **There will be no** mortality.

Booted eagle (*Hieraaetus pennatus*)

A migratory species. Its spring migration takes place in March-April, and its autumn migration takes place between the second half of August and until late October. It occurs mainly in low plains, mountain foothills and in the mountains at up to 1,400 m. a.s.l. In Bulgaria it is spread mainly in Southeastern and Northeastern Bulgaria, and is far more rare or completely absent from other parts of the country. It nests in old deciduous and mixed forests, including riparian forests, or in groups of preserved old trees among younger forests near vast open spaces where it hunts. During migration it occurs also in open spaces with single trees or clusters of trees. The nesting period begins in early April. The species builds its own nests or uses the nests of other raptors, on trees and very rarely on rocks. Lays 2-3 eggs in late April to early May and broods them for approximately 36-39 days. The chicks leave the nest in around 45-55 days. The species feeds on various small mammals, birds, reptiles, etc. (Golemanski 2011, Simeonov et al. 1990, Yankov 2007, Martinez et al. 2007).

Evaluation of the species in the zone

There are 2 to 8 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are all deciduous forests (habitat N06 according to the standard form) with an area in the zone of 24,955.22 ha. All open habitat types in the zone can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N22), with a total area of 15,851.39 ha.

Evaluation of the species in the studied region

This eagle was registered in two consecutive days in 2017 above the Byala Reka river valley and the crest south of the river, from which the bird (or birds) were coming and in the direction of which it was disappearing. Occupied-territory display - a characteristic undulating flight, was observed in both of these days. It is very likely that this species nests (level 4) in the forest south of the Byala Reka river. It was sighted once in 2019 and 2022 in the rocky outcrop area - most likely a bird from the same pair which nested in the same area in 2017. In 2022, it was sighted also to the south-east of Rozino village, but the bird flew away in a south-western direction. The studied area includes some potential nesting habitats for this species - all deciduous forest and shrubland. The area includes trophic habitats of the species - all open type habitats.

Impacts:

Direct habitat destruction

112.12 ha or 0.45% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. 2.52 ha or 0.02% of the feeding habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. There will be **insignificant** fragmentation.

The direct impact boundaries include a portion of a polygon of potential feeding grounds for the species, and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 2.53 ha. or 0.02% of the potential habitats of the species in the area. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. 188.51 ha or 0.76% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 245.82 ha or 0.99% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise.

4.62 ha or 0.03% of the potential trophic habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 9.89 ha or 0.06% of the potential trophic habitats of the species in the zone will be affected during the drilling and blasting operations.

There will be **insignificant** impact on both habitat types.

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area will be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely. Both impacts can be eliminated with adequate measures (see *Accipiter brevipes*).

Measures:

- Mine construction works should begin outside the species' breeding period (April 25 - May 10) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or chicks. Beginning work during this period is admissible only if an expert ornithologists carry out monitoring (at least 8 hours of stationary observation) and the species is not observed in less than 110 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A439 Olive-tree warbler (*Hippolais olivetorum*)

Inhabits deciduous forest edges, lighted low forests, orchards, shrubland, including Greek juniper, parks, and dry and hilly stony areas with rare vegetation. Most often the nest is made in Christ's thorn and, also, in smoke bushes and Greek juniper, or in the forks of low-stem trees. Brooding in Soutwestern Bulgaria begins in early May. The incubation period is not longer than 13 days. Sometimes the pair has 2 clutches. A migratory species. Its spring-time migration is between late April and early May, and the autumn migration is between end of July and mid-September. It feeds on arthropods (Golemanski 2011, Michev et al. 2012, Kennerley and Pearson 2010, Pearson and Lack 1992).

Evaluation of the species in the zone

There are 30-40 nesting pairs in the zone, according to the standard form. The shrubland habitats and orchards can be regarded as potential habitats of this species (habitats with codes N08 and N21 according to the standard form), with an area in the zone of 6,176.33 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. The shrubland habitats in the northern and southern parts of the studied area are potential habitats of this species.

Impacts:

Direct habitat destruction

0.91 ha., or 0.01% of the potential habitats of the species in the zone are situated within the boundaries of direct impact. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include one polygon of potential habitats for the species, and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 0.92 ha. or 0.01% of the potential habitats of the species in the area. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is not highly sensitive to disturbance, including in its nesting habitats. Generally, 3.32 ha or 0.05% of the potential habitats of the species in the zone are situated within the boundaries of potential impact (in the studied area). The impact will be **insignificant**.

Mortality

Habitats of this species are present in the IP. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area may be **significant**. This impact may be eliminated by suitable measures.

Measures:

- - Mine construction works should begin outside the species' breeding period (May 01 - June 10) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A022 Little bittern (*Ixobrychus minutus*)

Nesting-migratory species. Occurs throughout the country, mainly below elevations of 600 m., and in some mountains. Its nesting distribution extends mainly to the Danube area and along the Black Sea coastline and, rarely, inland. It inhabits predominantly freshwater bodies in Bulgaria's lowlands. Prefers spacious reed areas and shrubs in freshwater swamps and floodplains, and the downstream stretches of large rivers. The chicks are nidicolous. Outside of its nesting season it occurs in non-typical locations such as uncultivated lands and forest edges in the low parts of mountains. It feeds on insects, spiders, molluscs, crustaceans, small fish and amphibians, and their larvae (Golemanski 2011).

Evaluation of the species in the zone

There is 1 nesting pair in the zone according to the standard form. This species is noted as represented (P) during migration. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation and unsuitable for nesting, and without riparian vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

A338 Red-backed shrike (*Lanius collurio*)

A widespread and frequently occurring species. In the high mountains of Bulgaria it reaches and exceeds the upper forest boundary at 1,800-2,200 m. a.s.l. It inhabits open spaces

with brushes, highly rarefied forest margins, felling areas, windbreak strips, gardens, yards, and parks. It is a monogamous bird nesting as separate pairs. The breeding period is in May-July and, rarely, as far as August. The birds start building the nest approximately two weeks after arriving in their nesting areas. The nest is placed in shrubs, most often prickly. Usually, the egg laying begins during the second half of May and continues until early July, peaking between late May and early June. Four to seven eggs are laid and incubated for 12-15 days. The chicks are nidicolous. Both parents care for them for 9-17 days. The earliest nest leaving by chicks in Bulgaria has been observed in late May, and the latest sighting of chicks being fed by the adult birds is in August. A migratory species. Its spring-time migration is between the second half of April and May, and the autumn migration is between late August and late October. The species feeds on insects and other invertebrates, reptiles, birds and small mouse-like rodents. Sometimes these birds stockpile food by impaling their victims on thorns (Ivanov 2011, Stoyanov & Donchev 2013).

Evaluation of the species in the zone

There are 4,500-5,500 nesting pairs in the zone, according to the standard form. The grassland and shrubland habitats, the arable lands and the orchards, and the urban areas can be regarded as potential habitats of this species And(habitats with codes N08, N09, N10, N12, N15, N21 and N23 according to the standard form), with an area in the zone of 17,154.48 ha.

Evaluation of the species in the studied region

This species has been registered multiple times during the breeding season in open areas around Rozino village and on the ridge north of the Yuren Dere valley. The studied area includes potential habitats of this species – all grassland and shrubland habitats.

Impacts:

Direct habitat destruction

3.33 ha or 0.02% of the potential habitats of the species in the zone are situated within the boundaries of direct impact. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include several polygons of potential complete or partial habitats of this species, and the remaining area of these polygons will be of sufficient size to preserve its characteristics as a habitat for the species. **There will be virtually no** fragmentation since this species nests in forest edges and in man-made areas.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is not highly sensitive to disturbance, including in its nesting habitats. Generally, 12.30 ha or 0.07% of the potential habitats of the species in the zone are situated within the boundaries of potential impact (in the studied area). The impact will be **insignificant**.

Mortality

Nesting habitats of this species are present in the IP. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' numerous population in the area will be **insignificant**.

A339 Lesser grey shrike (*Lanius minor*)

It inhabits open spaces and pastures with trees and bushes or groups of trees in such spaces, natural and planted river-side forests, forest margins bordering on pastures or arable lands, strips of trees (including road-side strips), windbreak strips, orchards, vineyards with

single trees or bordering on small forests, rare artificial plantations, and the margins of smaller urban areas. It places its nest high up (5 - 6 to 12 m) in the main fork of trees or lower if no trees are present. It lays eggs during the second half of May and until June and incubates for 15-16 days. The chicks leave the nest at 16-18 days of age. A migratory species. Its spring-time migration is between the second half of April and late May, and the autumn migration is between August and September. It feeds on large insects and less often on small mammals, birds, lizards, and fruits (Ivanov 2011, personal observations).

Evaluation of the species in the zone

There are 29 nesting pairs in the zone, according to the standard form. The grassland habitats, the arable lands and the orchards, and the urban areas can be regarded as potential habitats of this species And(habitats with codes N09, N10, N12, N15, N21 and N23 according to the standard form), with an area in the zone of 11,834.99 ha.

Evaluation of the species in the studied region

This species has been registered only once during the breeding season, south of Rozino village. The studied area includes some potential habitats of this species - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no direct habitat destruction.**

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no habitat fragmentation.**

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no barrier effect.**

Disturbance

This species is less sensitive to disturbance as compared to larger species, including in its nesting habitats. 0.39 ha or 0.003% of the potential habitats of the species in the zone are situated within the boundaries of potential impact. The impact will be **insignificant**.

Mortality

There are nesting habitats of this species in the studied area, but will not directly impacted. The prerequisites for nests with eggs or young poorly flying chicks are not present. This species is less sensitive to disturbance as compared to larger species, including in its nesting habitats. **There will be no mortality.**

A433 Masked shrike (*Lanius nubicus*)

Nesting-migratory species. It inhabits pseudomaquis, rarefied sub-Mediterranean xerotherm oak forests, riparian hybrid poplar plantations and, less often, willow, ash and acacia growth in plain and hilly areas. It places its nest in prickly shrubs, in the main fork of thinner trees or on the horizontal branches of larger trees. It lays eggs by late May and early June and incubates them for 14-15 days. The chicks leave the nest at 18-20 days of age. A migratory species. Its spring migration occurs during the second half of April and mainly in May, and the autumn migration is in the second half of August. It feeds on insects, mostly grasshoppers and beetles, and less often on lizards and small birds (Golemanski 2011, Ivanov 2011).

Evaluation of the species in the zone

There are 8 nesting pairs in the zone, according to the standard form. The shrubland habitats and riparian plantations of hybrid poplar can be regarded as potential habitats of this species (habitats with codes N08 and N20 according to the standard form), with an area in the zone of 5,515.85 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. No potential habitats for this species are present in the studied area - the shrubland habitats in its northern and southern parts are small and are surrounded by forests with dense overstorey.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present. **There will be and no impacts** on this species and its habitats.

A459 Caspian gull (*Larus cachinnans*)

According to the latest studies, the yellow-legged gull (*Larus michahellis*) occurs in most of Bulgaria, including the protected zone under consideration. The yellow-legged gull (*Larus michahellis*) is a sedentary, migrating and wintering species. It nests on inaccessible vertical banks, islets or rocks along the Black Sea coastline, and also on buildings in the Black Sea towns, and, recently, inland. Outside its nesting period it occurs in various habitats such as lakes, swamps, river floodplains, dam lakes, rice paddies, fallow lands, urban landfills, urban areas etc., or anywhere it can find food (Collinson et al. 2008, Pons et al. 2005, Nankinov et al. 1997, personal observations).

Evaluation of the species in the zone

No information about the population density in the zone is present in the standard form. This species is noted as represented (P) during migration. No nesting habitats for this species are present in the zone. The potential trophic habitats of the species in the zone are the larger water impoundments, the more spacious arable lands and the urban areas (code habitats N06, N12 and N23 according to the standard form), with an area in the zone of 5,428.09 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. No potential habitats of this species are present in the studied area - the rivers and streams in the region are too small.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A179 Black-headed gull (*Larus ridibundus*)

Present in various wetlands outside its breeding season. The migration is highly extended over time, beginning in July and lasting until April. Feeds on fish, crustaceans and insects (Nankinov et al. 1997).

Evaluation of the species in the zone

No information about the population density in the zone is present in the standard form. This species is noted as represented (P) during migration. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A246 Woodlark (*Lullula arborea*)

It inhabits the margins of mountain and sub-montane forests, forest meadows, clearings and felling areas, rocky and stony areas with rare trees, scrub with singular trees. The bird nests on the ground, placing its nest among denser vegetation, at the base of trees, bushes or grass tufts. Its nesting period is between May and July. The chicks leave the nest at 11-13 days of age. The species feeds on caterpillars, beetles, spiders and other small invertebrates, and seeds it seeks in areas with low grassy vegetation or without grass (Michev et al. 2012, Bowden 1990, Jonsson 2006, Mallord et al. 2007).

Evaluation of the species in the zone

There are 424-469 nesting pairs in the zone, according to the standard form. The grassland and shrubland habitats in the zone can be regarded as potential habitats of this species (habitats with codes N08, N09, and N10 according to the standard form), with an area of 11,049.56 ha.

Evaluation of the species in the studied region

This species has been registered three times during the breeding season in open areas around Rozino village and on the ridge north of the Yuren Dere valley, outside the IP elements. The studied area includes potential habitats of this species – all grassland and shrubland habitats (including forest meadows).

Impacts:

Direct habitat destruction

3.33 ha or 0.03% of the potential habitats of the species in the zone are situated within the boundaries of direct impact. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include several polygons of potential complete or partial habitats of this species, and the remaining area of these polygons will be of sufficient size to preserve its characteristics as a habitat for the species. **There will be virtually no fragmentation** since this species nests in forest edges.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no barrier effect**.

Disturbance

This species is not highly sensitive to disturbance, including in its nesting habitats. 12.3 ha or 0.11% of the potential habitats of the species in the zone are situated within the boundaries of potential impact. The impact will be **insignificant**.

Mortality

Nesting habitats of this species are present in the IP. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' numerous population in the area will be **average**. This impact may be eliminated by suitable measures.

Measures:

- Mine construction works should begin outside the species' breeding period (May 01 - July 20) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or young.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A230 European bee eater (*Merops apiaster*)

Nesting-migratory species. It nests in colonies in holes dug in sheer clayey, loess and sandy banks in open sandy and dry areas, along the banks of various water impoundments, land slides, eroded valleys and, occasionally, in stone quarries. It lays eggs during the last ten-day period of May and in early June. Brooding is 30 days long. The chicks leave the nest at 26-31 days of age. A migratory species. The spring migration takes place in May, and the autumn migration takes place between August and mid-September. The species feeds on insects, mainly bees during the end of the breeding season and afterwards, and with other insects during the breeding period proper, hunting in diverse habitats, including arable lands and urban areas, and especially so during migration (Nankinov et al. 1997, personal observations).

Evaluation of the species in the zone

There are 290 nesting pairs in the zone, according to the standard form. It is represented (P) also during migration. Nesting requires microhabitats of suitable earth banks but usually banks in more spacious grassland habitats are occupied (codes N09 and N10 according to the standard form), with an area in the zone of 5,730.06 ha, and the trophic habitats include arable lands, orchards and urban areas (habitats with codes N09, N10, N12, N15, N21, and N23 according to the standard form), with an area in the zone of 11,834.99 ha.

Evaluation of the species in the studied region

This species has been recorded many times south of Rozino village and along the Byala Reka River during its breeding season but no colony has been found. A small area of potential nesting and trophic habitats of this species is situated in the studied area - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no** direct habitat destruction.

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no** habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is not sensitive to disturbance in its trophic habitats because it hunts also in urban areas. No conditions for nesting of this species exist in the boundaries of potential impact. **There will be no impact.**

Mortality

There are habitats of this species in the studied area, but will not directly impacted. The prerequisites for nests with eggs or young poorly flying chicks are not present. This species is less sensitive to disturbance as compared to larger species, including in its nesting habitats. **There will be no mortality.**

A073 Black kite (*Milvus migrans*)

Nesting and migrating, transient and partially wintering species. During the breeding period it occurs most frequently along the Danube and its tributaries and along the Maritsa and Tundja rivers and their tributaries, and in the Sakar mountain and the Dervent heights. During wandering and migrations it is present throughout Bulgaria, but its migration along the Black Sea coastline is more significant. It inhabits plains and hilly areas in Bulgaria, except for the mountain zone higher than 1,000 m. a.s.l. Prefers areas near wetlands, even if under increased anthropogenic pressure. This species nests individually or in rare colonies of up to 30 pairs in forests and clusters of trees in large river valleys or along man-made water impoundments. It gathers in groups during feeding, wandering, rest and migration. It also occurs in open areas during this time. This polyphagous species feeds on carrion, often taking other birds' prey, and catches insects and small vertebrate animals, including fish. It hunts mainly in and around wetlands, but also in open areas, including arable lands (Golemanski 2011, Simeonov et al. 1990, Sergio & Boto 1999, Sergio et al. 2003, Zawadzka 1999).

Evaluation of the species in the zone

There are 2 nesting pairs in the zone, according to the standard form. A part of the riparian forests (a part of habitat N16 according to the standard form) can be regarded as potential nesting habitats for the species in the zone, but owing to the species' specific requirements, the size of these habitats is unknown. All grassland habitats, arable areas and water bodies can be regarded as trophic habitats in the zone (codes N06, N09, N10, N12, N15), with a total area of 10,531.89 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. No potential nesting habitats of this species are present in the studied area - the rivers and streams in the region are shallow with steep banks overgrown with forest vegetation. A small area of potential trophic habitats of this species is situated in the studied area - the more spacious grassy locations south of the Rozino Village (habitat 6210), which will not be affected directly.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no direct habitat destruction.**

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no habitat fragmentation.**

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no barrier effect.**

Disturbance

This species is more sensitive toward disturbance in its nesting habitats which are not present within the boundaries of potential impact. 0.39 ha, or 0.004% of the potential trophic habitats of the species in the zone are situated here. No nesting habitats will be impacted. The impact will be **insignificant**.

Mortality

No nesting habitats of this species are present in the studied area. The prerequisites for nests with eggs or young poorly flying chicks are not present. **There will be no** mortality.

A077 Egyptian vulture (*Neophron percnopterus*)

Nesting-migratory species. Its springtime migration begins in the middle of February and during the autumn occurs until October at the latest. It nests in rock niches in rocky areas, gorge and valleys and, in the past, in niches in loess walls and on trees, at elevations of up to 400 m. and rarely up to 900 m. The pairs use up to 4 - 5 different nests spaced at 3-4 km apart. It lays eggs between late April and early May. The chicks leave the nest by the end of August or early September. This carrion eating species feeds rarely on tortoises and on other reptiles, small mammals etc. It searches for its food in diverse and mainly open habitats (Golemanski 2011, Simeonov et al. 1990, personal observations).

Evaluation of the species in the zone

There are 1-2 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are the rocky areas (habitat N22 according to the standard form) with an area in the zone of 410.57 ha. Predominantly a scavenger, this species is trophically linked to dead animals on whose carcasses it feeds, and, therefore, it does not rely on a certain habitat type, especially since it is being artificially fed (on a feeding pad near Madjarovo).

Evaluation of the species in the studied region

This species was sighted in 2017 in the rocky outcrop area, where it is most likely nesting (grade 4), because one bird was seen chasing a raven. In 2018, during migration (August 18), an adult and a juvenile, same year's bird, were observed and it is possible that they were individuals from the local pair. It was registered only twice in the same area in 2019 transiting the area without any signs of nesting in the region. In 2022 a bird was sighted during its nesting period above the Byala Reka river valley, flying westward. The rocks in the southern part of the studied area are potential nesting habitats of this species and will not be directly affected. This species is not dependent on a particular trophic habitat type.

Impacts:

Direct habitat destruction

No habitats of this species are present in the directly impacted area. **There will be no** direct habitat destruction.

Habitat fragmentation

No habitats of this species are present in the directly impacted area. **There will be no** habitat fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. Generally, 0.26 ha or 0.06% of the potential nesting habitats of the species in the studied area are situated within the boundaries of potential impact which is noise during drilling and blasting. The impact will be **insignificant**.

Mortality

Nesting habitats of this species are present within the boundaries of potential impact - drilling and blasting noise. If drilling and blasting are carried out during the species' breeding period, the species may leave any near-by nests, losing eggs and/or young chicks. Should this happen, the impact on the species' population in the area will be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Measures:

No drilling and blasting should be carried out during the breeding period of this species (April 15 – September 15) at a distance of less than 800 m. from the rocks south of the IP area.

Phase: Operating.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A023 Night heron (*Nycticorax nycticorax*)

Nesting and migrating, transient and rarely wintering species. It nests along the Danube and the Black Sea coastline and, very rarely, inland, at elevations of up to 400 m in Northern Bulgaria, and along the Maritsa, Tundja and Arda river valleys. This species inhabits freshwater lakes and swamps, dam lakes, fish farms and fish-breeding facilities, as well as floodplains and lowland oak forests near various wetlands. During migration it occurs also in coastal brackish water bodies, dam lakes, and irrigation channels (Golemanski 2011)

Evaluation of the species in the zone

No information about the population density in the zone is present in the standard form. This species is noted as represented (P) during migration. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A072 Honey buzzard (*Pernis apivorus*)

A migratory species. It can be seen between sea level and about 1,700 m. a.s.l., most frequently occurring in warm mountain foothills and low mountain areas. It inhabits areas with preserved high-stem deciduous and mixed forests near open areas. The nesting period begins in April. The bird builds its own nest on trees or uses the nests of other large bird species such as raptors and ravens. Most frequently, the species lays 2 eggs and, very rarely, 1, between April and May and broods for 28-35 days. The chicks leave the nest in around 40-45 days. The species feeds mainly on the larvae of ground wasps, bees, hornets and other insects, as well as rodents, reptiles and small birds (Golemanski 2011, Simeonov et al. 1990).

Evaluation of the species in the zone

There are 8 to 15 nesting pairs in the zone, according to the standard form. The potential nesting habitats for the species in this zone are all deciduous forests (habitat N06 according to the standard form) with an area in the zone of 24,955.22 ha. All open habitat types in the zone

can be regarded as trophic habitats (codes N08, N09, N10, N12, N15, N22), with a total area of 15,851.39 ha.

Evaluation of the species in the studied region

This species was registered several times during field studies, during migration and during the breeding season. It is possible that it nests (grade 1) to the west of Kokardja Dere valley and uses the open spaces in the IP as hunting grounds. The studied area includes some potential nesting habitats for this species - all deciduous forest and shrubland. The area includes trophic habitats of the species - all open type habitats.

Impacts:

Direct habitat destruction

112.12 ha or 0.45% of the potential nesting habitats of the species in the zone are situated within the boundaries of direct impact. 2.52 ha or 0.02% of the feeding habitats of the species will be affected in the zone. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential nesting habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. There will be **insignificant** fragmentation.

The direct impact boundaries include a portion of a polygon of potential feeding grounds for the species, and the remaining portion will be of insufficient area to preserve its characteristics as a habitat for the species. The impact will, together with the directly affected area, extend over 2.53 ha. or 0.02% of the potential habitats of the species in the area. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is sensitive to disturbance in its nesting habitats. 188.51 ha or 0.76% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 245.82 ha or 0.99% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise.

4.62 ha or 0.03% of the potential trophic habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 9.89 ha or 0.06% of the potential trophic habitats of the species in the zone will be affected during the drilling and blasting operations.

There will be **insignificant** impact on both habitat types.

Mortality

The IP includes nesting and trophic habitats of the species. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area will be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Mortality may occur because of the power line. Poles of unsuitable construction in the case of 20kV power lines may cause mortality by electrocution. Higher voltage power lines pose no risk of electrocution but collisions of birds with the strike termination cable are likely. Both impacts can be eliminated with adequate measures (see *Accipiter brevipes*).

Measures:

- Mine construction works should begin outside the species' breeding period (April 15 - August 05) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or chicks. Beginning work during this period is admissible only if an expert ornithologists carry out monitoring (at least 8 hours of stationary observation) and the species is not observed in less than 110 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A017 Great Cormorant (*Phalacrocorax carbo*)

A partially migrating and wintering species which can be seen during the entire year in suitable throughout in Bulgaria such as freshwater and semi-saline lakes and swamps, along the sea coastline, in inundated forests, along larger rivers, dam lakes and fish breeding ponds (Simeonov et al. 1990, personal observations).

Evaluation of the species in the zone

No information about the population density in the zone is present in the standard form. This species is noted as represented (P) during the wintering period. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A234 Grey-Headed Woodpecker (*Picus canus*)

Sedentary species. It inhabits primary oak and beech forests at elevations up to 1,000 - 1,200 m above sea level, and flooded river-side forests. It also inhabits more spacious river-side and other forests with old trees, urban parks and orchards. This species nests in hollows it digs in old deciduous trees, preferably with softer wood. The species lays eggs in May. Brooding is 15-17 days long. The chicks leave the nest at 24-27 days of age. A sedentary species. It feeds on eggs, ant larvae and adult ants, and various insects occurring on and underneath tree bark. Also, it eats the seeds of various deciduous trees and shrubs (Golemanski 2011, Nankinov et al. 1997, Jonsson 2006, personal observations).

Evaluation of the species in the zone

There are 5-10 nesting pairs in the zone, according to the standard form. The potential habitats for the species in this zone are all deciduous forests (habitat N06 according to the standard form) with an area in the zone of 24,990.922 ha.

Evaluation of the species in the studied region

This species was established several times along the Byala Reka river, outside the IP. The studied area includes potential habitats of this species - all deciduous forests, especially the forests around Yuren Dere.

Impacts:

Direct habitat destruction

112.12 ha or 0.45% of the potential habitats of the species in the zone are situated within the boundaries of direct impact. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include a small part of a very large polygon of potential habitats for the species, and the remaining portion will be of sufficient area to preserve its characteristics as a habitat for the species. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

188.51 ha or 0.76% of the potential nesting habitats of the species in the zone will be situated within the boundaries of potential impact during construction and normal operation. 245.82 ha or 0.99% of the potential nesting habitats of the species in the zone will be affected during the drilling and blasting operations. In fact, this area will be far smaller because blasting will be staged in both sections and, furthermore, the project provides for use of rubber blasting mats which reduce the generated noise. Furthermore, this species is sensitive toward larger birds. **The impact will be insignificant.**

Mortality

Nesting habitats of this species are present in the IP. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' population in the area may be **significant**, given its low numbers. This impact may be eliminated by suitable measures.

Measures:

- - Mine construction works should begin outside the species' breeding period (April 01 - July 10) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or Beginning work during this period is admissible only if an expert ornithologists carry out advance monitoring in the area (up to 2-3 days beforehand, at least along 3 transects along Yuren Dere and the ridges to the north and south of it, with auditory provocation every 400 m.) and the species is not observed in less than 300 m. around the IP elements.

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A307 Barred warbler (*Sylvia nisoria*)

Inhabits deciduous and mixed forest edges with abundant undergrowth, shrubs, hedges, and orchards in plain lands and along river banks. Most often its nest is placed low, in low trees and bushes. The species lays eggs in May-June. The chicks leave the nest in July. A migratory species. The spring migration is likely to occur in April, and the autumn migration is in August-September. It feeds on arthropods which it collects from shrubs and trees, and with fruits (Michev et al. 2012, Kuźniak et al. 2001, Payevsky 1999, Pearson and Lack 1992, Polak 2012).

Evaluation of the species in the zone

There are 35-45 nesting pairs in the zone, according to the standard form. The grassland and more spacious shrubland habitats and orchards can be regarded as potential habitats of this species in the zone (habitats with codes N08, N09, N10 and N21 according to the standard form), with an area of 11,906.39 ha.

Evaluation of the species in the studied region

This species was not found during the field studies. The studied area includes potential habitats of this species – all grassland and shrubland habitats.

Impacts:

Direct habitat destruction

3.33 ha or 0.03% of the potential habitats of the species in the zone are situated within the boundaries of direct impact. Given the small affected area, the impact is assessed as **insignificant**.

Habitat fragmentation

The direct impact boundaries include several polygons of potential complete or partial habitats of this species, and the remaining area of these polygons will be of sufficient size to preserve its characteristics as a habitat for the species. There will be **insignificant** fragmentation.

Barrier effect

The IP is not an insurmountable obstacle for the birds. **There will be no** barrier effect.

Disturbance

This species is not highly sensitive to disturbance, including in its nesting habitats. Generally, 12.30 ha or 0.10% of the potential habitats of the species in the zone are situated within the boundaries of potential impact (in the studied area). The impact will be **insignificant**.

Mortality

Nesting habitats of this species are present in the IP. If the study activities are started during the species' breeding period, the species may leave any nests in or near-by the IP, and such nests are at risk of being destroyed or abandoned with subsequent loss of eggs and/or young chicks. Should this happen, the impact on the species' numerous population in the area will be **average**. This impact may be eliminated by suitable measures.

Measures:

- Mine construction works should begin outside the species' breeding period (May 01 - July 20) so that a pair breeding in the area can relocate its nesting site (if activities are initiated near the nest) without loss of eggs and/or young .

Phase: Construction.

Effect: The risk of destruction / abandonment of nests or chicks is eliminated.

A004 Little grebe (*Tachybaptus ruficollis*)

Inhabits lakes, rivers, swamps, channels, fish farms, and settling ponds overgrown with aquatic vegetation. It lays eggs between late April and early May and broods for 20-27 days. The chicks become independent in 30 - 40 days and take to flight on the 44th to 48th day. This species can have two or even three broods. It feeds on small fish, crustaceans, mussels, small frogs, tadpoles, insects and their larvae, and on algae (Simeonov et al. 1990).

Evaluation of the species in the zone

No information about the population density in the zone is present in the standard form. This species is noted as represented (P) during migration. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

This species was not present during the field studies. No potential habitats of this species are present in the studied area - the banks of the rivers and streams in the region are densely overgrown with forest vegetation and unsuitable for nesting, and without riparian vegetation.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A165 Green Sandpiper (*Tringa ochropus*)

A migrating bird nesting and wintering in our country. Its spring-time migration starts between early March and early May while its autumn migration starts in early August and lasts until late November. Present throughout the country during migration. Nests on the ground or on trees, using, as a rule, old nests of thrushes and corvids. It inhabits swamped forests and forest areas near water bodies, banks of lakes, swamps, rivers, and canals overgrown with trees and shrubs, and around marshes and meadows (Nankinov et al. 1997).

Evaluation of the species in the zone

No information about the population density in the zone is present in the standard form. This species is noted as represented (P) only during migration. The potential habitats for the species in this zone are all water impoundments (habitat N06 according to the standard form) with an area in the zone of 410.57 ha.

Evaluation of the species in the studied region

The species was sighted once along the Byala river flow. Outside the boundary of potential impact. No potential habitats of this species are present in the studied area - rivers and streams in the region are shallow, with steep banks and no swampy areas.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

A142 Lapwing (*Vanellus vanellus*)

Nesting-migratory species. Prefers wet meadows, swamps and swampy areas, but inhabits also meadows, pasturelands, the banks of canals, agricultural areas, and rice paddies, and, during migration, river sides. It builds its nests on the ground, starting in April, and broods for around 26 -27 days. The chicks hatch in mid-May. Flightless chicks can be observed until early June. The migration occurs between early February and late April and between July and December. It feeds on worms, snails, insects and their larvae, and plants (Nankinov et al. 1997, personal observations).

Evaluation of the species in the zone

No information about the population density in the zone is present in the standard form. This species is noted as represented (P) only during migration. The potential habitats of the species in the zone are all water impoundments, wet grasslands and the arable areas (code habitats N06, N10 and N12 according to the standard form), with an area in the zone of 4,801.83 ha.

Evaluation of the species in the studied region

The species was sighted once along the Byala river flow. Outside the boundary of potential impact. No potential habitats of this species are present in the studied area - the rivers and streams in the region are shallow, with steep banks and no swampy areas, and the grasslands and arable areas are too dry.

Impacts:

No potential habitats of this species are present in the studied area. The prerequisites for presence of individuals in the IP area, and of nests with eggs or young poorly flying chicks, are not present - this species does not nest in the zone. **There will be and no impacts** on this species and its habitats.

V.2. Description and analysis of the impact by the investment proposal on the integrity of the protected zone as regards its structure, functions and nature conservation goals (loss of habitats, fragmentation, disturbance of species, disruption of the composition of species, chemical, hydrogeological and geological changes etc.), both during the implementation, and during operation of the IP.

V.2.1. Rhodopes - Eastern Protected Zone, BG0001032

Structure

According to the accepted approach, the entire area of individual IP elements plus small areas closed between them, or between individual elements and their access roads is regarded as affected. Thus, the IP will affect the territorial integrity of the Rhodopes - Eastern Protected Zones on 146,5777 ha or 0.067% of its territory. Given the small affected area, it can be concluded that implementation of the **IP will not impact significantly the structure of the zone.**

Functions and nature conservation goals

Losses of natural habitats

The IP will affect 4 natural habitat types (Table V.2-1, Figure V.2-1). Although the areas are relatively large in absolute numbers, especially with respect to the forest habitats, compared to the area they occupy in the protected zone, the impact, including the impact on the parameters Criterion 1. Area within the zone, will be **insignificant**.

Table V.2.1-1: Direct impacts on natural habitats which are subject to protection in the Rhodopes - Eastern Protected Zone.

No.	Attachment 1	Affected area /ha	Affected area /%
1	5210	0.9115	0.0305
2	6210(*)	1.5202	0.0257
3	91AA*	17.3182	0.1217
4	91M0	95.1278	0.1504

Loss of habitats and species

The IP will affect directly the habitats of 30 animal species which are subject to protection in the zone (Table V.2-2). Given the small affected area relative to the habitats of this species in the zone, the impact, including on the parameters of Criterion 2. Area of the habitats within the zone, is evaluated as **insignificant**.

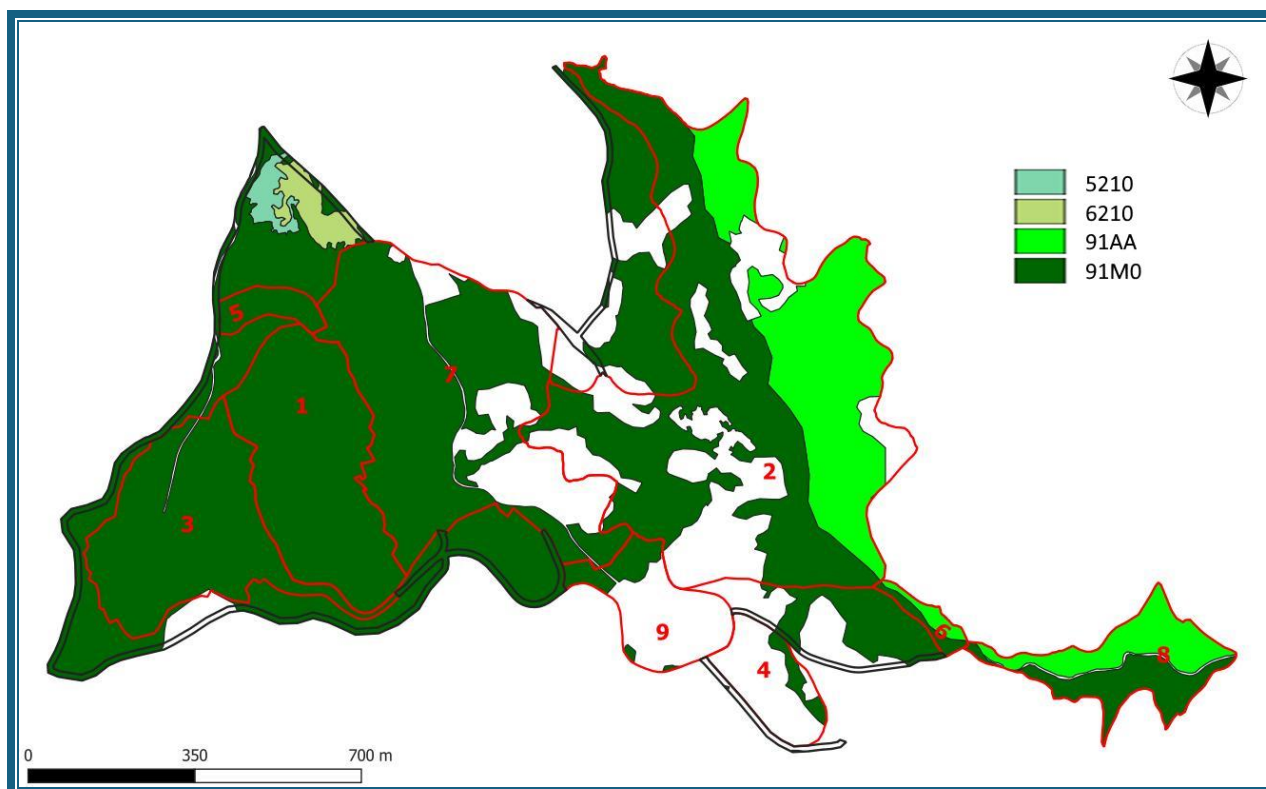


Figure V.2-1: Affected natural habitats and their location relative to the IP elements (red contour lines): 1. Pit/in-pit waste rock stockpile; 2. External flotation tailings facility; 3. Pit/In-pit flotation tailings facility; 4. External topsoil stockpile 2; 5. External topsoil stockpile 1; 6. Contact water reservoir; 7. External waste rock stockpile; 8. Non-contact water reservoir; 9. Process plant; black lines – extent of the access roads.

Table V.2.1-2: Direct impacts on the habitats of species which are subject to protection in the Rhodopes - Eastern Protected Zone.

No.	SPECIES	Direct /ha	Direct /%	No.	SPECIES	Direct /ha	Direct /%
1	<i>A. torrentium</i>	0.2380	0.0231	17	<i>M. caspica</i>	37.2019	0.0783
2	<i>P. caloptenoides</i>	2.4317	0.0022	18	<i>E. sauromates</i>	142.3914	0.0785
3	<i>E. aurinia</i>	3.3295	0.0110	19	<i>Rh. mehelyi</i> *	8.0611	0.0203
4	<i>E. quadripunctaria</i>	97.5903	0.0653	20	<i>Rh. hipposideros</i> *	28.0979	0.0610
5	<i>E. catax</i>	3.3295	0.0085	21	<i>Rh. ferrumequinum</i> *	26.6251	0.0663
6	<i>D. schmidtii</i>	15.7281	0.0339	22	<i>Rh.s euryale</i> *	26.5668	0.0757
7	<i>L. cervus</i>	123.3995	0.0883	23	<i>Rh. blasii</i> *	95.1433	0.0741
8	<i>C. cerdo</i>	97.4144	0.0928	24	<i>M. blythii</i> *	103.4258	0.0570
9	<i>R. alpina</i>	10.0000	0.0416	25	<i>B. barbastellus</i>	95.1278	0.2623
10	<i>M. funereus</i>	143.3502	0.1096	26	<i>M. schreibersi</i> *	36.1268	0.0549
11	<i>O. eremita</i>	10.0000	0.0164	27	<i>M. capaccinii</i> *	36.1268	0.0551
12	<i>T. karelinii</i>	8.0000	0.0038	28	<i>M. emarginatus</i> *	94.9752	0.0776
13	<i>B. variegata</i>	146.5785	0.0692	29	<i>M. bechsteini</i>	95.1278	0.2087
14	<i>T.o hermanni</i>	146.5784	0.0702	30	<i>M. myotis</i> *	103.4258	0.0570
15	<i>T. graeca</i>	144.6563	0.0721	31	<i>C. lupus</i>	146.5777	0.1204
16	<i>E. orbicularis</i>	59.8455	0.0722	32	<i>L. lutra</i>	2.3376	0.0170

* - in respect of cave bat species — potential hunting habitats.

Fragmentation

Natural habitats:

The implementation of the investment proposal will cause fragmentation of the four natural habitats affected directly by the IP. As a result, the loss will be larger than the direct loss in respect of grassland habitats - 6210 and 6220, but the overall area will be insignificant compared to their area in the zone. As regards the forest habitats, 91AA and 91M0, there will be no additional loss of areas but only increased participation of non-typical species over an insignificant area. Fragmentation of natural habitats as a result of IP implementation, including the impacts on the parameters of Criterion 1. Surface area within the zone and Criterion 2. Structure and functions, is assessed as **insignificant**.

Species:

The habitats of 25 species will be fragmented and directly impacted (all species other than amphibians and reptiles which are not dependent on a particular minimal size of their habitats). This fragmentation will result from the reduction of areas with polygons with potential habitats of these species (hunting habitats for cave bats) and will make such habitats less favourable. The impact, including impact on the parameters of Criterion 2. Surface area of the habitats within the zone, will be **insignificant**, because the remaining unaffected parts of these polygons will be of sufficient size usable by the respective species.

Barrier effect

Implementation of the investment proposal may cause barrier effect for 12 species which are subject to protection in the zone – European wolf (*Canis lupus*), warty newt (*Triturus karelinii*), yellow-bellied toad (*Bombina variegata*), spur-thighed tortoise (*Testudo graeca*), Hermann's tortoise (*Testudo hermanni*), thick shelled river mussel (*Unio crassus*), stone crayfish (*Austropotamobius torrentium*), *Euplagia quadripunctaria*, *Dioszeghyana schmidtii*, stag beetle (*Lucanus cervus*), great capricorn beetle (*Cerambyx cerdo*), and long-horned beech beetle (*Morimus funereus*). This effect is assessed as **insignificant** for all the 12 species. The impact on the parameters of Criterion 3. Structures and functions, will also be insignificant.

Destruction of individuals

Implementation of the investment proposal may cause mortality of individuals of 23 species which are subject to protection in the zone.

In respect of the 2 forest bat species, mortality may occur at the beginning of mine construction during the breeding or hibernation period. In such case, the impact, including on the parameters of Criterion 1. Population within the zone, may be **medium**, given the small impacted area on the one hand and the high quality of the habitat and mortality likelihood on the other hand. Mortality will be **eliminated** by the prescribed preventive measures (see below).

Mortality may be expected in respect of 5 amphibian and reptile species, 2 of which – spur-thighed tortoise (*Testudo graeca*) and Hermann's tortoise (*Testudo hermanni*), the impact, including on the parameters of Criterion 1. Population within the zone, may be **medium**, given the high population number of these species in the protected zone. As regards the Dione's snake (*Elaphe sauromates*), the impact, including the impact on the parameters of Criterion 1. Population within the zone, may be **significant**, because this species is very rare. This impact will be reduced to **insignificant** by the prescribed preventive measures (see below).

Mortality may exist also for 12 invertebrate species and for the 4 fish species, because the impact, including the impact on the parameters of Criterion 1. Population within the zone, is

assessed as **insignificant**. The mortality for these species will be reduced through application of mitigation measures (see below).

Disturbance of species

The implementation of the investment proposal may cause disturbance for the European wolf (*Canis lupus*) and the otter (*Lutra lutra*), but it will be **insignificant**. The impact on some parameters of Criterion 4. Future prospects, will be **insignificant**. In respect of the 2 forest bat species, mortality may occur at the beginning of mine construction during the breeding or hibernation period. The impact, including the impact on the parameters of Criterion 1. Population within the zone, may be **medium** and lead to higher mortality rates (assessed above). The impact will be reduced through application of mitigation measures.

Distortion of the composition of species

Implementing the investment proposal **will not** distort the composition of species in the protected zone.

Cumulative effect

The IP will affect 0.067% (146.58 ha) of the area of the Rhodopes - Eastern protected zone. The remaining past, present and/or future plans, programs and projects/investment proposals (Attachment II-1) will affect a total of 0.23% (509 ha) of the area of the zone. In reality, the area affected by the remaining investment proposals/plans, programs and projects is smaller because in most of the cases the affected areas were calculated using the surface areas of the entire properties in which an activity will be carried out, and not the actually affected surface areas. The surface area affected in a cumulative manner is equal to less than 0.3% of the surface area of the zone.

The assessment shows that the potential impacts from the IP on the natural habitats and the habitats of species which are subject to protection in the zone are Level 0 – No impact or Level 1 – Minor impact. For detailed information about the impacts on each habitat type by the various investment proposals/plans, programs and projects in the zone see Attachment II-1.

Loss of natural habitats: The loss of natural habitats which are subject to protection in the zone (5210, 6210, 91AA* and 91M0) will affect small areas between 0.03% and 0.15% of the total area of these habitats. 37 of the remaining investment proposals/plans, programs and projects in the zone will also affect relatively small parts of these habitats - between 0.04% and 0.35%. The expected cumulative impact will affect 0.07% of habitat 5210, 0.38% of habitat 6210, 0.28% of habitat 91AA and 0.28% of habitat 91M0. The expected cumulative loss of habitats, including the impacts on the parameters of Criterion 1. Surface area within the zone, is **insignificant** (Level 1).

Loss of habitats of species: The loss of habitats of species in the zone will impact relatively small areas, between 0.007% and 0.12% of the potential habitats of the respective affected species in the zone. 74 of the remaining investment proposals/plans, programs and projects in the zone will affect habitats of species impacted by the IP under consideration, with the total area affected by the other activities in the zone varying between 0.00002% and 0.93%. The expected cumulative impact will affect 0.06% to 0.98% of the habitats of species which are subject to protection (Table V.2.1-3).

Table V.2.1-3: Cumulative impacts on the habitats of species which are subject to protection in the Rhodopes - Eastern Protected Zone (% of the total surface area of the habitats in the zone).

Species	Loss of Habitats, IP	Loss of habitats Other IP/PPP	Cumulative Impact
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Species	Loss of Habitats, IP	Loss of habitats Other IP/PPP	Cumulative Impact
<i>R. mehely</i>	0.02	0.84	0.86
<i>R. hipposideros</i>	0.06	0.81	0.87
<i>R. ferrumequinum</i>	0.07	0.92	0.98
<i>R. euryale</i>	0.08	0.63	0.71
<i>R. blasii</i>	0.07	0.42	0.49
<i>B. barbastellus</i>	0.06	0.10	0.17
<i>M. bechsteini</i>	0.07	0.52	0.59
<i>M. blythii</i>	0.06	0.92	0.97
<i>M. emarginatus</i>	0.08	0.70	0.78
<i>M. myotis</i>	0.06	0.14	0.20
<i>M. schreibers</i>	0.06	0.93	0.98
<i>M. capaccinii</i>	0.06	0.51	0.57
<i>C. lupus</i>	0.12	0.07	0.19
<i>L. lutra</i>	0.02	0.04	0.06
<i>B. variegata</i>	0.07	0.08	0.15
<i>T. hermanni</i>	0.07	0.13	0.20
<i>T. karelinii</i>	0.007	0.19	0.20
<i>T. graeca</i>	0.07	0.14	0.21
<i>E. sauromates</i>	0.08	0.08	0.16
<i>M. caspica</i>	0.08	0.00002	0.08
<i>E. orbicularis</i>	0.07	0.07	0.14
<i>E. aurinia</i>	0.01	0.20	0.21
<i>E. catax</i>	0.01	0.24	0.25
<i>E. quadripunctaria</i>	0.07	0.19	0.26
<i>D. schmidtii</i>	0.03	0.14	0.17
<i>L. cervus</i>	0.09	0.14	0.22
<i>O. eremita</i>	0.02	0.06	0.08
<i>C. cerdo</i>	0.09	0.07	0.17
<i>M. funereus</i>	0.11	0.04	0.15

The expected cumulative loss of habitats, including the impacts on the parameters of Criterion 2. Area of the habitats within the zone, is **insignificant** (Level 1). No significant cumulative impact on the species which are subject to protection is expected from the loss of habitats, with the addition to the impact of this IP of the impacts of other past, present and/or future investment proposals/plans, programs and projects.

V.2.2. Byala Reka Protected Area, Code BG0002019

Structure

According to the accepted approach, the entire area of individual IP elements plus small areas closed between them, or between individual elements and their access roads is regarded as affected. Thus, the IP will affect the territorial integrity of the Byala Reka Protected Zones on 146,1546 ha or 0.328% of its territory. Given the small affected area and the peripheral location of the IP, it can be concluded that implementation of the **IP will not impact significantly the structure of the zone.**

Functions and nature conservation goals

Loss of habitats and species

The IP will affect directly the habitats (nesting and/or trophic) of 23 bird species which are subject to protection in the zone (Table V.2.2-1). The impact is assessed as **insignificant** because of the small area relative to the surface area of the habitats of these species in the zone.

Table V.2.2-1: Direct impacts on the habitats of bird species which are subject to protection in the Byala Reka Protected Zone.

No.	Species	Nesting / ha	Nesting / %	Trophic / ha	Trophic / %
1	<i>Accipiter brevipes</i>	112.12	0.45	2.52	0.02
2	<i>Accipiter nisus</i>	140.85	0.53	145.92	0.33
3	<i>Aquila chrysaetos</i>	0.00	0.00	2.52	0.02
4	<i>Aquila heliaca</i>	140.85	0.53	1.52	0.01
5	<i>Aquila pomarina</i>	140.85	0.53	2.52	0.02
6	<i>Bubo bubo</i>	0.00	0.00	3.33	0.02
7	<i>Buteo buteo</i>	140.85	0.53	2.52	0.02
8	<i>Buteo rufinus</i>	0.00	0.00	2.52	0.02
9	<i>Caprimulgus europaeus</i>	125.32	0.41	146.15	0.33
10	<i>Ciconia ciconia</i>	0.00	0.00	1.52	0.01
11	<i>Ciconia nigra</i>	112.12	0.44	0.00	0.00
12	<i>Circaetus gallicus</i>	112.12	0.45	2.52	0.02
13	<i>Dendrocopos medius</i>	112.12	0.45	Coincide with the nesting habitats	
14	<i>Dryocopus martius</i>	140.85	0.53	Coincide with the nesting habitats	
15	<i>Falco peregrinus</i>	0.00	0.00	3.33	0.02
16	<i>Falco subbuteo</i>	140.85	0.53	2.52	0.02
17	<i>Hieraaetus pennatus</i>	112.12	0.45	2.52	0.02
18	<i>Hippolais olivetorum</i>	0.91	0.01	Coincide with the nesting habitats	
19	<i>Lanius collurio</i>	3.33	0.02	Coincide with the nesting habitats	
20	<i>Lullula arborea</i>	3.33	0.03	Coincide with the nesting habitats	
21	<i>Pernis apivorus</i>	112.12	0.45	2.52	0.02
22	<i>Picus canus</i>	112.12	0.45	Coincide with the nesting habitats	
23	<i>Sylvia nisoria</i>	3.33	0.03	Coincide with the nesting habitats	

Fragmentation

The habitats of 18 species will be fragmented and directly impacted. This fragmentation will result from the reduction of areas with polygons with potential habitats of these species and will make such habitats less favourable. The impact will be **insignificant** because the remaining unaffected parts of these polygons will be of sufficient size to be usable by the species.

Barrier effect

The nature of the IP does not suggest any barrier effect for birds, given the low elevation and the high mobility of this group of species.

Destruction of individuals

Implementation of the investment proposal may cause mortality (destruction/abandonment of nests with eggs and/or chicks) of 20 species which are subject to

protection in the zone. With the exception of the red-backed shrike (*Lanius collurio*), whose population in the zone will sustain **insignificant** impact, and the woodlark (*Lullula arborea*), which will sustain **medium** impact, the impact on all other species (18) is assessed as **significant**. The mortality for these species will be **eliminated** through application of mitigation measures (see below).

Disturbance of species

IP implementation may cause disturbance for 33 bird species manifested as functional loss of nesting and/or trophic habitats. The impact is assessed as **insignificant** (abandonment of nests with eggs and/or chicks is assessed above as mortality). The impact will be reduced through application of mitigation measures.

Distortion of the composition of species

Implementing the investment proposal **will not** distort the composition of species in the protected zone.

Cumulative effect

The assessment shows that the potential impacts from the IP on the habitats of bird species which are subject to protection in the zone are Level 0 – No impact or Level 1 – Minor impact. For detailed information about the various investment proposals/plans, programs and projects in the zone see Attachment II-1.

The IP will impact directly around 0.3% of the territory of the Byala Reka Protected Zone. The remaining investment proposals/plans, programs and projects with potential for impact on the zone will affect around 94 ha of its territory, or 0.21% of its surface area. The area under cumulative impact is equal to 0.54% of the territory of the zone.

The IP will impact predominantly forest habitats in the zone with expected loss of up to 0.45% of the deciduous forests and 0.53% of all forest habitats of birds in the zone. Two other investment proposals in the zone will affect forest habitats. The investment proposal for construction of a pumping station in Boturche village will impact a deciduous forest habitat, and the pumping station IP in Chernichevo village will impact coniferous crops. Pumping station construction will impact a very small area (0.02 ha each) and the area under cumulative impact will equal 0.45% of the deciduous forests and 0.53% of the forest habitats as a whole. The evaluated IP will impact 4.2 ha of open habitat equal to 0.33% of the open habitats in the zone (incl. arable lands). The remaining IPs in the zone involve raising of permanent crops and will affect open habitats and agricultural lands. Their total area is around 94 ha, equal to 0.63% of the open habitats and the arable lands in the zone. The cumulative impact will cover 0.66% of the open habitats in the zone. The expected cumulative habitat loss is **insignificant** (Level 1) both in forest and in open habitats. No significant cumulative impact on the species which are subject to protection is expected from the loss of habitats, with the addition to the impact of this IP of the impacts of other past, present and/or future investment proposals/plans, programs and projects.

VI. Mitigation Measures proposed.

1. Mine construction should begin outside the April 01 - August 15 and November 20 - March 10 periods.

Phase: Construction.

Effect: The mortality risk for *Barbastella barbastellus* and *Myotis bechsteinii* individuals, as well as the loss of nests with eggs and/or chicks of bird species which are subject to protection in the Byala Reka Protected Zone is eliminated, including

- *Accipiter brevipes* (breeding period between 01.05 and 15.08.);
- *Accipiter nisus* (breeding period between 01.05 and 30.07.);
- *Aquila heliaca* (breeding period between 01.04 and 30.07.);
- *Aquila pomarina* (breeding period between 01.04 and – 05.08.);
- *Buteo buteo* (breeding period between 01.05 and – 15.08.);
- *Caprimulgus europaeus* (breeding period between 01.05 and – 10.08.);
- *Ciconia nigra* (breeding period between 01.05 and – 15.08.);
- *Circaetus gallicus* (breeding period between 01.05 and – 15.08.);
- *Dendrocopos medius* (breeding period between 01.04 and 10.07.);
- *Dryocopus martius* (breeding period between 01.04 and 10.06.);
- *Falco subbuteo* (breeding period between 01.04 and 10.06.);
- *Hieraaetus pennatus* (breeding period between 25.04 and – 10.08.);
- *Hippolais olivetorum* (breeding period between 01.05 and 10.06.);
- *Lullula arborea* (breeding period between 01.05 and 20.07.);
- *Pernis apivorus* (breeding period between 15.04 and – 05.08.);
- *Picus canus* (breeding period between 01.04 and 10.07.);
- *Sylvia nisoria* (breeding period between 01.05 and 20.07.).

2. 2 . No drilling and blasting should be carried out during the breeding period of this species (April 15 – September 15) at a distance of less than 800 m. from the rocks south of the IP area, unless the absence of nesting individuals of the species is proven by preliminary bird monitoring.

Phase: Construction.

Effect: The risk of loss of nests with Egyptian vulture eggs and/or chicks (*Neophron percnopterus*) is eliminated.

3. Temporary solid fences (or permanent fences if the engineering design provides for fencing of the site) around the IP elements should be designed and constructed. Characteristics of the fences: Continuous, smooth, vertical surface at least 120 cm high from the ground, with 20 cm. below ground (buried). Flat panels (plexiglas, sheet steel etc.), concrete elements or narrow mesh net (with 0.5/0.5 cm mesh size) can be used. The individual elements must be without joints, folds, and supports etc. Such fences should be built also inside, around the individual elements so that the surface areas of individual fenced areas should not exceed 20 ha. The fences should be installed after grubbing of the forested areas. Once the fences are installed, the animals remaining in the fenced-off area, mainly the two terrestrial tortoises and the Dione's snake, should be collected and relocated. This should be done at least three times in May during the year in which construction will begin, and in the month preceding the beginning of the construction works (unless it is in the winter), and the largest possible number of specialists should be involved. In all cases, this activity should be planned and carried out under the guidance of a qualified herpetologist. The collected animals should be released as soon as possible in territories which are suitable for the species.

Phase: Prior to construction

Effect: The risk of destruction of amphibians and reptiles, including those which are subject to protection in the Rhodopes - Eastern Protected Zone, during construction is reduced to the possible minimum.

4 . During construction, the Yuren Dere flow should be protected against increased turbidity by installing of the so called turbidity curtains or employing adequate construction processes.

Phase: Construction.

Effect: The fish mortality risk, including fish which is subject of protection in the protected zone, is eliminated.

5. Poles for a 20 kV powerline should be of a type preventing electrocution of birds, or with insulated live parts. An ornithology expert should be consulted about this measure during the engineering design phase.

Phase: Engineering.

Effect: The bird mortality risk, including bird species which are subject of protection in the protected zone “Biala river”, is eliminated.

6. Deflecting (contact) plates (bird diverters), rotating spheres or spirals made of phosphorescent material must be installed on the strike termination cables of powerlines above 20 kV. An ornithology expert should be consulted during the engineering design phase about the type, longitudinal placement and spacing of these devices.

Phase: Engineering.

Effect: The bird mortality risk, including bird species which are subject of protection in the protected zone “Biala river”, is eliminated.

7. Drawing up of a detailed design for staged technical and biological rehabilitation at the earliest stage, during the technical design phase. Experts on invertebrates, amphibians, reptiles and bats should be consulted and their opinions taken into consideration in the rehabilitation design. The disturbed areas within the polygons mapped as habitat 91AA (see Attachment V.1.1-1) should be rehabilitated using pubescent oak (*Quercus pubescens*).

Phase: Engineering.

Effect: The period for recovery of the habitats of all animal species, including species which are subject of protection in the protected zone, is reduced. Recovery of areas occupied by the 91AA habitat.

8. Protective mats preventing fly-rock and reducing noise and dust during drilling and blasting should be used.

Phase: Operating.

Effect: The disturbance of animal species, including species which are subject of protection in the protected zone, is reduced.

VII. Reviewing of alternatives and assessment of their impact on the protected zone.

1. ‘Zero’ (No Action) Alternative

No action alternative is the description of the present situation and its consequences if the IP is not implemented. In this case, the no-action alternative would preserve the present situation and the current parameters of the environmental media. The present situation of the fauna and flora and the trends for its changes will remain, because they are the result of modern succession processes in ecosystem, caused by factors such as global climate change, land use in the region, the degree of urbanization and the economic activities of the population. Of course, the present nature conservation status of the target habitats and species in the zones will be preserved but given the insignificant impacts expected from the IP with applied preventive measures, the no-action alternative is not proposed.

2. Other alternative solutions.

2.1. Siting Alternatives

The particular location of the natural resource in the subsurface does not allow for consideration of any IP siting alternatives.

Pit location, size and layout are dictated by geology of the ore body and the determined for mining reserves as topographic and geographic constraints combine to reduce opportunity for locating the associated ore processing plant and auxiliary infrastructure and facilities.

Several attendant facility and infrastructure siting options have been considered. The following major project design components have been considered in respect of options for design and location:

- the ore mining method and the siting of the respective attendant facilities;
- minimal encroaching upon the soil surface;
- requirements for environmentally sound management of mine wastes.
- minimal impact on areas of the Rhodopes Eastern protected area with code BG0001032 and the Byala reka protected area with code BG0002019.

One of this options - **Option 2019**, was subject to a preliminary assessment in 2019.

Option 2019.

According to submitted data, the investment proposal comprises, in respect of Option 2019, the following (Figure VII.2.1-1):

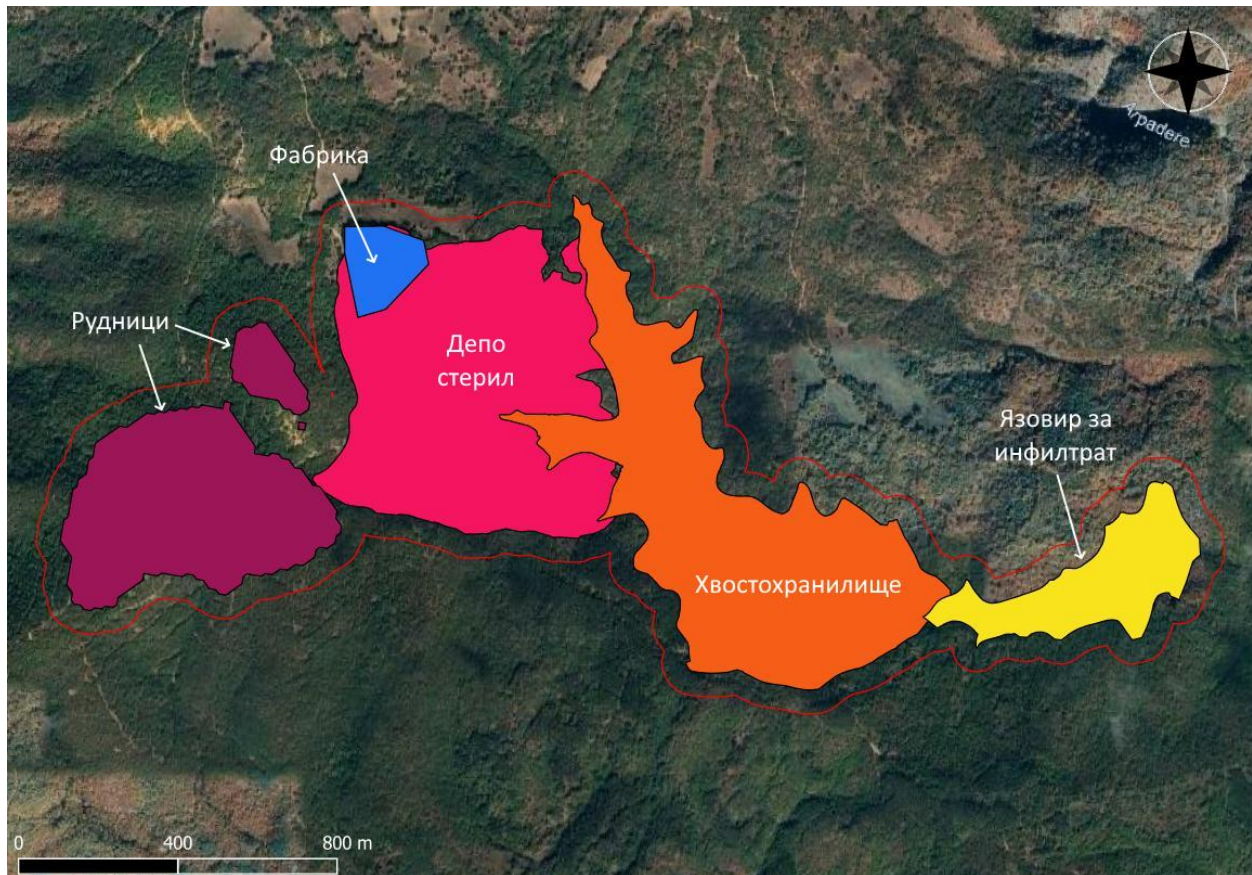


Figure VII.2.1-1: Layout of the IP elements according to Option 2019; red contour line – a 60 m. buffer.

- two pits with respective surface areas of 24 and 3 ha;
- process plant, 3 ha footprint;
- waste rock and soil stockpile, 50 ha footprint;
- tailings management facility, 43 ha footprint;
- infiltrate pond downstream of the tailings management facility, 11.1 ha footprint.

Since some elements overlap, their total footprint on-site amounts to 125.28 ha, with intervening fragments of very small surface area or width to not be impacted. In order to avoid underestimation of the affected surface area, a 60 m wide buffer has been designed around all elements, and its surface area is considered directly affected. This surface area is 185.77 ha.

The summarized impacts on natural habitats and species, including birds, which are subject to protection in both protected zones are presented below in tables VII.2.1-1 through VII.2.1-3. Table VII.2.1-4 presents a comparison of the parts of natural habitats affected by both options.

Table VII.2.1-1: Summary of impacts on natural habitats which are subject to protection in the Rhodopes - Eastern Protected Zone. For description of the impacts see item III and for the degrees of assessment see item V.1.

Code	Area Direct / degree	Fragment. / degree
6210(*)	1	1
91AA*	1	1
91MO	1	1

Table VII.2.1-2: Summary of impacts on species which are subject to protection in the Rhodopes - Eastern Protected Zone. Mitigation measures are required in respect of the species designated in 'bold' type, as they are expected to be impacted.

Code	SPECIES	Area Direct / degree	Fragment. / degree	Barrier / degree	Mortality / degree	Disturbance / degree
1032	<i>Unio crassus</i>	1	0	1	1	0
1093	<i>Austropotamobius torrentium</i>	1	1	1	1	0
4053	<i>Paracaloptenus caloptenoides</i>	1	1	0	1	0
1065	<i>Euphydryas aurinia</i>	1	1	0	1	0
6199	<i>Euplagia quadripunctaria</i>	1	1	1	1	0
1074	<i>Eriogaster catax</i>	1	1	0	1	0
4032	<i>Dioszeghyana schmidtii</i>	1	1	1	1	0
1083	<i>Lucanus cervus</i>	1	1	1	1	0
1088	<i>Cerambyx cerdo</i>	1	1	1	1	0
1087	<i>Rosalia alpina</i>	1	0	0	1	0
1089	<i>Morimus funereus</i>	1	1	1	1	0
1084	<i>Osmoderma eremita</i>	1	1	0	1	0
1134	<i>Rhodeus sericeus amarus</i>	0	0	0	1	0
1146	<i>Sabanejewia aurata</i>	0	0	0	1	0
1149	<i>Cobitis taenia</i>	0	0	0	1	0
1171	<i>Triturus karelinii</i>	1	0	1	1	0
1193	<i>Bombina variegata</i>	1	0	1	1	0
1220	<i>Emys orbicularis</i>	1	0	0	0	0

Code	SPECIES	Area Direct / degree	Fragment. / degree	Barrier / degree	Mortality / degree	Disturbance / degree
1222	<i>Mauremys caspica</i>	1	0	0	0	0
1217	<i>Testudo hermanni</i>	1	0	2	3	0
1219	<i>Testudo graeca</i>	1	0	2	3	0
5194	<i>Elaphe sauromates</i>	1	0	0	3	1
1302	<i>Rhinolophus mehelyi</i>	1	1	0	0	0
1303	<i>Rhinolophus hipposideros</i>	1	1	0	0	0
1304	<i>Rhinolophus ferrumequinum</i>	1	1	0	0	0
1305	<i>Rhinolophus euryale</i>	1	1	0	0	0
1306	<i>Rhinolophus blasii</i>	1	1	0	0	0
1307	<i>Myotis blythii</i>	1	1	0	0	0
1308	<i>Barbastella barbastellus</i>	1	1	0	2	2
1310	<i>Miniopterus schreibersi</i>	1	1	0	0	0
1316	<i>Myotis capaccinii</i>	1	1	0	0	0
1321	<i>Myotis emarginatus</i>	1	1	0	0	0
1323	<i>Myotis bechsteini</i>	1	1	0	2	2
1324	<i>(Myotis myotis)</i>	1	1	0	0	0
1352	<i>Canis lupus</i>	1	1	1	0	1
1355	<i>Lutra lutra</i>	1	1	1	0	1
2635	<i>Vormela peregusna</i>	0	0	0	0	1

Table VII.2.1-3: Summary of impacts on species which are subject to protection in the Byala Reka Protected Zone. Mitigation measures are required in respect of the species highlighted yellow, as they are expected to be impacted. No measures other than reduction of affected area apply to the species in red.

No.	Species	Area Direct / degree	Fragment. / degree	Mortality / degree	Disturbance / degree	Possible measures
1	<i>Accipiter brevipes</i>	1	0	3	3	NO
2	<i>Accipiter nisus</i>	1	0	3	3	YES
3	<i>Anthus campestris</i>	1	1	3	1	YES
4	<i>Aquila chrysaetos</i>	1	1	0	1	-
5	<i>Aquila heliaca</i>	1	1	3	3	YES
6	<i>Aquila pomarina</i>	1	1	3	3	YES
7	<i>Bubo bubo</i>	1	1	3	1	YES
8	<i>Burhinus oedicephalus</i>	1	1	3	1	YES
9	<i>Buteo buteo</i>	1	1	3	3	YES
10	<i>Buteo rufinus</i>	1	1	0	1	-
11	<i>Caprimulgus europaeus</i>	1	1	3	3	YES
12	<i>Ciconia ciconia</i>	1	1	0	0	-
13	<i>Ciconia nigra</i>	1	1	3	3	YES
14	<i>Circaetus gallicus</i>	1	1	3	3	YES
15	<i>Circus pygargus</i>	0	0	0	1	-
16	<i>Coracias garrulus</i>	0	0	0	1	-
17	<i>Dendrocopos medius</i>	1	1	3	3	NO

No.	Species	Area Direct / degree	Fragment. / degree	Mortality / degree	Disturbance / degree	Possible measures
18	<i>Dendrocopos syriacus</i>	1	0	1	0	-
19	<i>Dryocopus martius</i>	1	1	3	3	NO
20	<i>Emberiza hortulana</i>	1	1	2	1	-
21	<i>Falco naumanni</i>	0	0	0	1	-
22	<i>Falco peregrinus</i>	1	1	0	1	-
23	<i>Falco subbuteo</i>	1	0	3	3	NO
24	<i>Falco vespertinus</i>	0	0	0	1	-
25	<i>Falco eleonora</i>	0	0	0	1	-
26	<i>Hieraaetus fasciatus</i>	0	0	0	1	-
27	<i>Hieraaetus pennatus</i>	1	1	3	3	YES
28	<i>Hippolais olivetorum</i>	0	0	0	1	-
29	<i>Lanius collurio</i>	1	0	1	1	-
30	<i>Lanius minor</i>	0	0	0	1	-
31	<i>Lanius nubicus</i>	0	0	0	1	-
32	<i>Lullula arborea</i>	1	0	2	1	-
33	<i>Merops apiaster</i>	0	0	0	1	-
34	<i>Milvus migrans</i>	0	0	0	1	-
35	<i>Neophron percnopterus</i>	0	0	3	1	YES
36	<i>Pernis apivorus</i>	1	1	3	3	YES
37	<i>Picus canus</i>	1	1	3	3	NO
38	<i>Sylvia nisoria</i>	0	0	0	1	-

Table VII.2.1-4: Comparison of parts of natural habitats which are subject to protection in the Rhodopes - Eastern Protected Zone, affected by both options, as ha and as %.

No.	Attachment 1	Evaluated option / ha	Evaluated option / %	Option 2019 / ha	Option 2019 / %
1	5210	0.91	0.031	0.00	0.000
2	6210(*)	1.52	0.026	1.78	0.030
3	91AA*	17.32	0.122	39.63	0.279
4	91M0	95.13	0.150	104.65	0.165

As can be seen from the tables, Option 2019 will cause significant impact in respect of 5 bird species which are subject to protection in the Byala Reka Protected Zone, the impacts being disturbance and loss of nests with eggs/chicks, and no mitigation measures *apply other than reduction of the impacted area*. **These conclusions have lead to the development of the option considered presently, under which the directly impacted area is reduced by approximately 40 ha.**

2.2. Process Alternatives

The open pit mining is applied at deposits with ore bodies which are close to the surface and have substantial low-grade mineral resources. The main disadvantage of this mining method is the formation of a new negative form in the landscape (open pit or borrow), which is a challenge to the rehabilitation of the environment after shut-down of operations. Additionally, another large landscape form may be created – a waste rock stockpile.

Underground mining is used to mine higher grade deposits located at greater depths in the earth's crust. This method requires backfilling of the mined stopes. Underground backfilling is required for the more efficient extraction of the reserves and for prevention of surface caving above the ore bodies. The underground mining option facilitates the management of mine wastes as it involves partial reclaim and reuse of waste products as fill materials in the underground backfilling process. In the case of close-to-surface low-grade deposits, this option is economically infeasible because it involves higher mine construction and operational costs.

Shaft mining is not an option for the conditions in the “Rozino deposit for the following reasons:

- the small bedding depth of the ore body – 15-20 m;
- the small strip ratio – 2.5, making shaft mining systems environmentally unsound;
- the morphological type of the mineralization – veinlet-disseminated, requires exact identification of balance ores and proper and regular extraction, which is difficult in shaft mining. Shaft mining would require setting aside of Appendix areas for temporary stockpiling of different ore types and their subsequent blending prior to feeding to the processing plant.

No such other alternatives could be considered because the mining technology considers the location of the natural resource in the subsurface, and the geological mining conditions. The open mining of polymetal ores is a method widely applied in similar deposits. It is also justified as the only economically viable method, given the expenses for mining, processing and hauling relative to the market price of the produce.

There are three possible alternatives for mined-ore processing:

- *Alternative 1*: Ore mining and crushing within the license and selling to processing facility owners;

- *Alternative 2*: Processing the ore to gold bearing concentrate as the final product within the concession area. This option includes mandatory construction and operation of a concentrator plant which requires increasing of the potential concession area in order to provide sufficient space for the auxiliary facilities such as: water and chemical solution reservoirs, flotation tailings storage facility, storage facility for the finished product, etc. This option would require additional water management - provision of sufficient amounts of fresh water and sufficient volumes of return water.

- *Alternative 3*: Processing of ore to end metal as the final product within the concession area, which would require: mining, a processing plant, cyaniding and end-metal production facility. Given the proven mineral reserves, this option is economically and financially non-viable and excludes the need for another hazardous chemical substance - cyanide.

The preliminary technical and economic assessment of all three options with a +/- 30%% accuracy show that *Alternative 2* as unambiguously advantageous.

Alternative 1 is inapplicable for the following reasons:

- remoteness from any existing processing facilities. Apart from being economically unsound, hauling of enormous quantities of ore at such a distance means significant presence of heavy-duty trucks on the road network and, therefore, higher emissions of harmful substances in the ambient air, above-standard noise levels, lasting disturbance of animal species and significant discomfort for the people who use these roads;

- the existing plant is limited to processing of ore from specific deposits with specific throughputs and ore composition. In fact, there is no available production capacity to take additional quantities of ore from the Rozino deposit;

- limited volumes of the respective processing plant waste facilities, designed with specific needs, conditions and capacities in mind.

Alternative 2 which is preferred by the Customer allows for a final product – gold-bearing concentrate of significantly smaller volume as compared to the ore mass, can be transported

easily for further processing with lesser impact on the road network and on the environment adjacent to the transport routes.

Two flotation-waste management alternatives are possible:

- *Alternative 1:* Conventional spigotting into a TMF whereby water carries the waste slurry to the TMF, which is, by nature, a water-engineering facility.

- *Alternative 2:* Disposal of thickened waste; Additional dewatering of the processing waste produces 70-75% solid waste which is transported to the waste storage facility by means of a pipeline.

Considering the advantages of thickened waste disposal, the Customer intends to use Alternative 2.

The advantages of this technology over the disposal of high water content waste are as follows:

- Reduced use of 'fresh' water by 20÷25%, leading to reduced volume and area of the 'fresh' water reservoir by up to 5%;
- Increased recovery of return water by 20÷25%, leading to reduced volume and footprint of the 'contact' water reservoir by up to 5%.
- Reduced footprint of the tailings disposal facility by 10 to 15% through reduced volume of disposed waste;
- Low water content in the disposed waste by up to 5%.
- Accelerated waste drying and solidifying - 1-2 days in dry seasons.
- Increased overall stability coefficient of the stockpile and retaining wall bodies because of lower or zero water content in the waste;
- Reduced risks related to the disposal of high water content waste;
- Possibility for staged rehabilitation of areas once the design disposal levels are reached.

VIII. Maps.

Attachment V.1.1-1 presents a habitat distribution map of the studied area.

IX. Conclusion about the type and degree of negative impact.

1. Rhodopes - Eastern Protected Zone, BG0001032

Level of impact on the protected zone

Implementing the investment proposal will not distort the territorial integrity of the Rhodopes - Eastern Protected Zone because of the small affected area.

Area and degree of impact

Natural habitat types

IP implementation will have **insignificant** impact on 4 natural habitats which are subject to protection in the zone.

Species which are subject to protection

Application of adequate measures means that the impact on the species which are subject to protection in the zone caused by IP implementation will be **insignificant**.

We can conclude that the INVESTMENT PROPOSAL FOR MINING AND PROCESSING OF POLYMETAL ORES FROM THE ROZINO DEPOSIT, TINTYAVA PLA IN THE LANDS OF ROZINO AND GUGUTKA VILLAGES, IVAYLOVGRAD

MUNICIPALITY, HASKOVO DISTRICT with application of adequate measure will cause insignificant impact on the integrity and structure of the zone and on the natural habitats and species which are subject to protection in it. The IP conforms to the subject and goals for protection of the Rhodopes - Eastern Protected Zone, code BG0001032.

2. Byala Reka Protected Zone, code BG0002019

Level of impact on the protected zone

Implementing the investment proposal will affect insignificantly the territorial integrity of the Byala Reka Protected Zone because of the small affected area.

Area and degree of impact

Bird species which are subject to protection

Application of adequate measures means that the impact on the bird species which are subject to protection in the zone caused by IP implementation will be **insignificant**.

We can conclude that the INVESTMENT PROPOSAL FOR MINING AND PROCESSING OF POLYMETAL ORES FROM THE ROZINO DEPOSIT, TINTYAVA PLA IN THE LANDS OF ROZINO AND GUGUTKA VILLAGES, IVAYLOVGRAD MUNICIPALITY, HASKOVO DISTRICT with application of adequate measure will cause insignificant impact on the integrity and structure of the zone and on the bird species which are subject to protection in it. The IP conforms to the subject and goals for protection of the Byala Reka Protected Zone, code BG0002019.

X. Existing circumstances as per Article 33 of the Biodiversity Act

None.

XI. Information about the study and impact prediction and assessment methods used

Methodology

The field studies of plant habitats and plant and animal species were carried out in May 2017, August and September 2018, May, June and July in 2019, and June 2022. Data from other studies of ours in this part of the Eastern Rhodopes were used - August 2014, July and September 2016, April, May and June 2018, July 2020, March and May 2022, and March 2025.

The studied area (SA) was defined as a 110 m. buffer around all elements of the investment proposal (IP) plus a 700 m. buffer around both pits. This is the distance over which we expect maximum impact to be caused by disturbance to more sensitive species such as raptors, black stork and large mammals from machines and people during the construction and operation phases and from the drilling and blasting works during operation. The entire area of individual IP elements plus small areas closed between them, or between individual elements and their access roads is regarded as affected.

Initial mapping of the habitats in the studied area was carried out using the distance method (Brainerd et al 2006). A study area was outlined around the IP boundaries using QGIS Desktop 3.4 Madeira (WGS 84/UTM 35N coordinate system) (see above). Using visual interpretation of satellite images (Google Earth, 5.2.1.1588), and data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022) as reference, polygons of homogeneous habitats were outlined by hand in a GIS environment (Quantum GIS 2.14.8-Essen). The principles and methods of this mapping are based on the CORINE Land Cover methodology (Commission of the European Communities

1994). The polygons drawn in advance in the buffer were verified during the field work. Subsequent corrections were made as necessary and habitat classification according to EUNIS (Davies et al. 2004).

Typical locations were described during the on-site work in order to obtain the most complete possible idea about the habitats in the studied area. The transect method was used to describe the defined communities. The geobotanical descriptions feature the species names according to Kozhuharov (1992) and Asyov et al (2012), while the evaluation of plant species is in accordance with the five-point Brown - Blanke (Guinochet 1973) rating. The habitats of significance for conservation were identified using the Guidelines for Identifying the Habitats of European Significance in Bulgaria. (Kavrakova et al. 2009).

Plant species of significance for conservation (listed in the attachments to Bulgaria's Red Data Book or the Biodiversity Act) were established using the transect method.

The invertebrate were studied using the standard method with 'pitfall' traps comprising plastic 500 ml containers, half full with super-saturated acetic acid and salt solution, buried to the substrate level. Flying species and other species not falling into the trap were observed directly during the walk-over the areas. Also, the suitability of the habitats for the specific species were also evaluated.

The on-site study of amphibians, reptiles and mammals was based on the transect method whereby the researcher observes the terrain on both sides, walking at a moderate pace. Specific microhabitats, such as heaps of stones, puddles, watering troughs, were studied in more detail. The individuals or traces of their activities which were observed (prints, excrements, shelters etc.) were registered using GPS devices.

The transect method and stationary observations were used to study the bird fauna. The time in which the various individuals were sighted along the route was recorded (with a down-to-the minute accuracy). The GPS tracker data allow to determine their approximate locations. Birds were established by direct sighting and acoustically by their species-specific calls. A 10x50 magnification binoculars and a 2-60x80 magnification telescope were used for the sightings.

This assessment of the impact of the project on bats was based on own field studies conducted between 14 and 16 September 2018, 24-28 May 2019 and 20-25 June 2019, which is the period for migration of some species, finding shelter and raising young, and on available published data and archived information about bat presence in the region. Benda et al. (2003) also summarized the available information about bats in the region. The suitability of potential bat habitats within the investment proposal area and the studied area was verified during the field studies. The field-work and result analysis methodology for this study was consistent with the recommendations of EUROBATS and the Swedish National Energy Administration (Ahlen, 2003; Rodrigues et al. 2008, Petrov 2008). The field study method and approach described below have been applied multiple times during field studies of bats in the Republic of Bulgaria.

One specific method to estimate the composition of species and activeness of bats during the above studies was registration and analysis of echo-location and social ultrasounds by means of a Transect Tranquility detector. BatSound 3.1 for Windows was used to analyse the recordings, with consideration of the following main sound parameters: duration of separate sounds (ms), time period between subsequent sounds (ms), sound frequency with maximum energy (kHz), highest and lowest frequency (kHz), and the specific sonogram shape. The detector was used to record sounds during the dark part of the day, for a period of 180 seconds starting 1 hours after sunset. The records were made in certain points using three working frequencies in the 30-120 Hz range. GPS units combined with portable computers were used to identify the geographic location of the points of measurement. Google Earth was used to provide the map of the region over the Internet, with real-time access to a 3D model of Earth with detailed satellite photographs of each point of the Earth's surface.

Standard 6 and 12 m. bird nets were used and the hollows in old and dead trees with crevices and peeling bark were inspected with an endoscope. The study was a multiple-species type and was carried out using the transect and point methods - walk and spot counts.

The impacts on the natural habitats which are the object of protection in the zones (impacted areas, distances, mortality risk, likelihood of disturbance) were calculated and analysed in a GIS environment (QGIS Desktop 3.4 Madeira, Google Earth Pro 7.3.6.10201) using our mapping and data from the 'Mapping and determining the nature conservation status of natural habitats and species - Phase I' Project (MOEW 2022), provided by MOEW pursuant to the Access to Public Information Act.

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XII. Documents referred to in Article 9, paragraph items 3 and 3.

Attachment XII-1

XIII. Attachments

Attachment 1 Letter from MOEW Ref. NO. OBOC-68-17/18.11.2024 – hard copy

Attachment II.1 (on electronic media)

Cumulative impact on the natural habitats and the habitats of species that are subject to protection in the protected areas

Attachment V.1.1-1 on electronic media:

Habitat distribution map (EUNIS) in the studied area

Attachment XII-1 (on electronic media)

Documents referred to in Article 9, paragraphs 2 and 3 of the Compatibility Assessment Regulation