

**Nature Conservation**

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## Balkan Mineral and Mining EAD

### REPORT

**Assessment on the Compatibility of Conservation Objectives of the Protected Zone Eastern Rhodope and Protected Zone Krumovitza with the Investment Proposal "Extraction and Processing of Gold-Bearing Ore from the Krumovgrad Exploration Area"**

#### **Executive Summary**



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#### **List of abbreviations:**

<b>Abbreviation</b>	<b>Full meaning</b>
FCS	Favorable Conservation Status
IP	Investment Proposal
PZ	Protected Zone
CA	Compatibility Assessment (Article 6 Assessment)



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## 1. Preface

This assessment has been prepared pursuant to Art. 6 (3) and 6 (4) of Directive 92/43/EEC, Art. 31-34 of the Bulgarian Law on Biodiversity, and the Regulation on Requirements for Conducting a Compatibility Assessment (CA) between Plans, Programs, Projects, as well as Investment Proposals and the Conservation Objectives of Protected Zones (PZ).

Apart from the procedural requirements in assessing the likelihood of adverse impacts and their significance, the following principles were considered:

- The best available information was used to conduct the assessment;
- The precautionary principle is the basis for environmental protection in the EU Treaty and as such has been interpreted for use in this report as the adoption of the worst case scenario for all possible impacts;
- The relationship between Art. 6 (3) of Directive 92/43/EEC, which requires the assessment of the integrity and objectives of each zone and network as a whole throughout a country and Art. 2 (2) of the Directive, which points out that the measures introduced under the Directive should lead to the preservation or restoration of the Favorable Conservation Status (FCS) of all types of species and habitats.

## 2. Information about the Investment Proposal

The Investment Proposal (IP) of Balkan Mineral and Mining EAD is associated with mining and processing of gold-bearing ore from deposits in the Khan Krum field – Ada Tepe section, Krumovgrad Municipality, and the Kardzhali District. The main site, where the IP will be carried out is located about 3 km. south of the town of Krumovgrad, Kardzhali District. The total area of the IP is about 85 ha. The main activities planned in the IP include:

1. Extraction of gold ores by an open cut method;
2. Processing of ore to concentrate by crushing, grinding and flotation;
3. Storage of mining waste (rock materials and waste from enrichment) and construction of landfill for soil materials;

The "Khan Krum" field includes four sections - Ada Tepe, Kuklitsa, Sarnak, and Skalak.

The IP will be developed in two phases:

- Phase 1 - extraction and processing of ores via the open-cut method from the Ada Tepe section in the amount of 850 000 tons/annum with expected operational period of 9 years.
- Phase 2 - extraction and processing of the adjacent areas located in the vicinity of the villages Kaklitsa, Sarnak, Skalak and Kupel, provided sufficient reserves of valuable minerals and other geological materials present economically viable mining conditions.

Alternative 2 foresees the processing of ore to a final product (gold/silver doré bullion) applying conventional cyanide leaching. Its implementation requires an area of 156 ha, construction of a tailings dam as well as the use of toxic reagents (cyanides).

## 3. Characteristics of the Protected Zones

The IP falls entirely within the borders of the PZ BG0001032 Eastern Rhodope according to the Habitats Directive 92/43/EEC (Sites of Community Interest – pSCIs) and is located near PZ BG0002012 Krumovitsa according to the Birds Directive 79/409/EEC zone (Specially protected areas – SPAs). The total area of the PZ Eastern Rhodope amounts to 21,700 ha. PZ Krumovitsa was adopted with Decision № 122 of 02.03.2007 of the Council of Ministers (promulgated in SG, Issue 21 of 09.03.2007) and has a total area of 11,200 ha.

## 4. Characteristics of the Area of the Investment Proposal

The investment proposal covers the Ada Tepe hill and neighbouring areas, where stockpiles, water pipes, ponds, landfills, microdams for the accumulation of industrial water for mining activities, and depots for ore materials will be constructed.

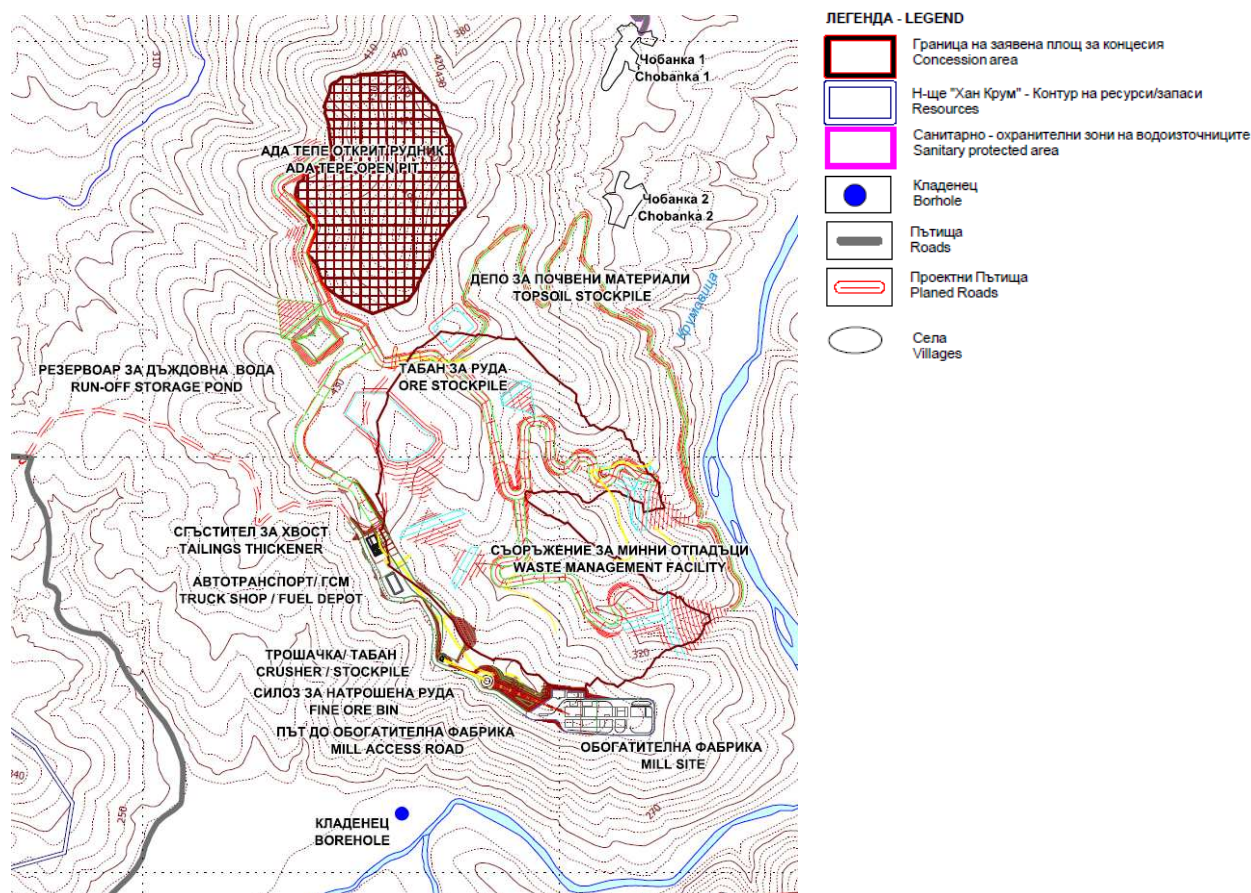
The Ada Tepe hill has an elevation of 492.4 meters and dominates the landscape. Its primary vegetation consisted of Xerotherm Oak forests, however, the hill was deforested almost completely in the past. Nearly 40-50 years ago Black Pine (*Pinus nigra*) and Locust (*Robinia pseudoacacia*) trees were planted, which now occupy most of the area. In some areas restoration of the natural vegetation has been observed. These natural processes can not be substantial in the future due to a change in soil composition caused by the pine monoculture, which has made the full restoration of indigenous vegetation at Ada Tepe impossible. The southern and eastern slopes of the hill are steeper and were previously used as pasture. Especially characteristic of the area is the Petrophile Community, which has national environmental conservation importance and is found north of the confluence of the Kesebir and Krumovitsa rivers on the slopes of Ada Tepe.

The gully (Kaldzhik Dere), where the tailings dam (alternative 2) is planned to be built, is located northwest of Ada Tepe, next to the western slopes of the hill, which have been reforested with Black Pine. This gully has been partially developed, has small patches of arable land. Its northern bank forms a low ridge, which is occupied by a complex community of pseudo-steppe annual grains (*Poa bulbosa*, *Psilurus aristatus*, *Brachypodium distachyon*, and others) – Habitat 6220\* and shrubs of Red Juniper (*Juniperus oxycedrus*) – Habitat 5210. There are also small preserved fragments of ruderal Mesophilic Hay meadow (6510). Despite the high degree of anthropogenic degradation related to past grazing activities; relatively stable populations of orchids of the genus *Ophrys* can be found. By the dam planned as a part of the micro pond, there are preserved groves of Hungarian Oak (*Quercus frainetto*) and Durmast (*Quercus daleschampi*).

The Kesebir and Krumovitsa rivers pass along the east and north sides of Ada Tepe before they merge southeast of the hill. The rivers are characterised by a seasonal spring freshet. In summer large shingle deposits become exposed. Downstream there are small, but relatively well established Rarian shrubs with *Tamarix ramosissima*, also a habitat included in the Habitats Directive – 92D0.

The remaining terrain on which the investment proposal is planned, is mainly heavily ruderal cultivated land around semi-rural areas and villages that have no permanent residents.

**Figure 1. Map of the Investment Proposal (Alternative 1)**



## 5. Probable Impacts on Habitats and Species

Probable direct impacts:

- 🦋 Habitat destruction
- 🦋 Mortality
- 🦋 Barriers affecting habitat functionality
- 🦋 Animals chased away due to intensive human presence

Probable indirect impacts:

- 🦋 Increased danger of fires
- 🦋 Danger of accidental pollution in case of failure of the infrastructure
- 🦋 Invasion of alien species in natural habitats
- 🦋 Impeding the quality of neighboring habitats due to disturbance (noise and light pollution)
- 🦋 Impeding the quality of habitats and food base due to water pollution

Possible cumulative effects:

- 🦋 Exploitation of satellite deposits
- 🦋 Melioration activities on the Krumovitza River
- 🦋 Cumulative effects due to intensified traffic, noise pollution, etc.

## 6. Assessment of the Impact on the Protected Zones

A relatively small area (about 85 ha.) or about 0.037% of what will be the zone's affected area, are in the proximity of anthropogenic landscapes (many villages, arable fields, actively used pastures, forest plantations) explain the relatively small number of habitats and species that will be affected by the IP.

It is possible that the cumulative effect of developing the fields will cause significant negative impact at both the local and protected zone levels.

The operation of the mine implies the following negative impacts on species and habitats:

### 6.1. Habitats

- 🦋 Direct destruction of habitat during construction - a negligible impact on both the protected zone and regional levels for Habitat 91M0; insignificant and negligible impact on the protected zone level, but significant at local level for Habitats 6220 and \* 5210. The loss for Habitat 6510 is significant in terms of the area lost, but is negligible in terms of representation of the habitat.
- 🦋 Indirect insignificant impact on habitats 5210, 6220, 6510, 91M0 and 92D0.
- 🦋 Influx of invasive plant species and change in the species structure of the habitats, mainly due to the increased urbanization in this part of the PZ.

### 6.2. Invertebrate Fauna

- 🦋 Direct destruction of the habitats and populations during the time of construction and operation.
  - *Callimorpha (Euplagia) quadriventris*: The loss of habitat on zone level is about 0,56%. The small local population will be significantly affected.
  - *Cerambyx cerdo* and *Lucanus cervus*: Insignificant impact at the zone level and at the local level on the habitats and populations would be insignificant – 0.01 to 0,03%.
  - *Unio crassus* – the IP will not affect the favourable conservation status of the species.
- 🦋 The creation of landfills and stockpiles will cause the long-term deterioration of the FCS of these habitats with respect to their structural and functional parameters.
- 🦋 The introduction and influx of invasive and synanthropic animals, weeds, and ruderal plant species, which will change the species structure of the habitat and may have negative effects on the zones conservation status.

### 6.3. Fish fauna

- IP does not directly affect the fish fauna because it does not plan the discharge of significant quantities of waste water nor it plans extraction of significant freshwater quantities from the Krumovitz River.
- In varying degrees, a risk of contamination exists by accidents, which may lead to release of greater amount of water under intense rainfall.
- The danger of an influx of invasive fish species and a change in species structure in the local area of the IP is negligible.

### 6.4. Amphibians and Reptiles

- The CA of the IP from a herpetological aspect consists of an impact assessment on the territory's tortoises: Herman's Tortoise (*Testudo hermanni Gmelin*) and Spur-thighed Tortoise (*Testudo graeca* Linnaeus). FCS of both species in the territory are preserved and this has been confirmed by the comparison of field data with the calculations of data from reference populations.
- The number of directly and indirectly affected tortoises of both species amount to 1133. The impact of the IP on tortoise habitats would be insignificant at the zone level: 0,048% - 0,063%. This level is deemed acceptable.
- The impact on the other species of amphibians and reptiles included in Natura 2000 and inhabiting the territory of the PZ Eastern Rhodope is insignificant.

### 6.5. Bats

- Direct destruction of habitats and shelters: This impact will affect mostly the Greater horseshoe bat (*Rhinolophus ferrumequinum*). During the development of the open pit an underground summer shelter will be destroyed.
- The formation of permanent stockpiles will deteriorate the FCS of these habitats in terms of structure and functions.
- The expected fragmentation of bat habitats will be negligible, given the limited area of the IP and the tremendous wealth of favorable habitats and shelters for bats in the PZ.
- Given the extremely low frequency of occurrence of three of the four bat species established in the area of the IP, the overall impact on them within the PZ Eastern Rhodope will be negligible.

### 6.6. Large Mammals

- There is no direct impact on mammal species.

### 6.7. Birds

- The expected impact of the IP on the bird species included in Annex I to the Birds Directive and protected in PZ Krumovitz is negligible.

## 7. Assessment of Mitigation Measures

Given the nature and scope of the IP, **complex mitigation activities can be planned** for the habitats and the species, which will be affected by the IP in PZ Eastern Rhodope. It is necessary to implement the following mitigation measures during the execution of the IP (similar investment proposals in the area are not allowed).

### 7.1. General Measures

These are the measures that would enhance the protection of habitats and most species.

1. During mine-site reclamation the introduction of alien plant and animal species must be prevented. Recultivation must proceed with local flora (if possible).

*Anticipated effect:* Reducing the risk of accidents and restriction of the introduction of invasive or alien species in all habitats in the zone. Prevention of potential damages on the trophic base and habitat structure.

2. Do not use the rivers as water sources.

*Anticipated effect:* Removal of the indirect effect on habitat 92D0.





3. The PZ Eastern Rhodopes must be marked off with special signs and information boards, displaying the object and purpose of the zone, and the restrictive regimes.

*Anticipated effect:* Full compliance with the restrictive regimes by the personnel.

4. During operations the traffic should follow predetermined routes with clear and permanent markings. Traffic outside the roads and the approaches to building spots in the area should not be allowed.

*Anticipated effect:* Prevention of further devastation of vegetation in the areas of equipment traffic. Reducing the disturbance caused by the movement of people and equipment.

5. Do not allow any other investment proposals for ore extraction on the territory of Krumovgrad municipality, affecting habitats and species subject to conservation in the zone.

*Anticipated effect:* Removal of the cumulative impact due to the increase of the anthropogenic stress over PZ Eastern Rhodope and prevention of any further negative impacts on habitats and species in the zone.

6. Do not exploit alternative ore deposits. Two of them – Kaklitsa and Kapel are outside the zone but lie in close proximity and protect habitats in Directive 92/43/EEC. The other deposits are in the zone and their development will cause a large cumulative impact and lead to the destruction of part of the zone.

*Anticipated effect:* Removal of the cumulative impact due to the increase of the anthropogenic stress over PZ Eastern Rhodope and prevention of any further negative impacts on habitats and species in the zone.

7. Comply with safety rules and do not burn vegetation.

*Anticipated impact:* Prevention of temporary destruction of habitats, including the substrates for development and the trophic base for all species subject to protection.

8. To hold staff briefing on the implementation of measures to mitigate the impact of construction and preparatory work and later operations – the staff is responsible for the operation and maintenance of the facility's infrastructure in the area of IP.

*Anticipated impact:* Proper and complete implementation of mitigating measures and awareness of the ideas of nature protection.

## 7.2. Invertebrates

Given the nature and scope of the IP and the planned production and technological structures at this stage there are no complex mitigation measures for the species *Callimorpha (Euplagia) quadripunctaria* its habitat.

For *Cerambyx cerdo* and *Lucanus cervus* it is necessary to implement all of the following mitigation measures during the execution of the IP:

1. During the construction the removal of old and rotting hollow deciduous trees, their stumps and fallen trunks should be reduced to a minimum. It is obligatory to keep some of the trunks and the stumps of the cut oak trees in the forest habitats impacted by the IP and those near them.

*Anticipated effect:* Conservation and preservation of the appropriate substrates for feeding and development of larvae of *Cerambyx cerdo* and *Lucanus cervus*.

2. Do not cut the oak patches located to the north of Ada Tepe and below the open pit, and also the patches near the low-grade ore stockpile. Restrict the area of the latter in its southeastern part, which affects a part of habitat 91M0.

*Anticipated effect:* Removal of direct impact on the habitat 91M0 and the resulting indirect impact on the appropriate substrates for feeding and development of larvae of *Cerambyx cerdo* and *Lucanus cervus*.

3. During the construction to be reduced to a minimum: the removal of surface layer of the soil, the removal of ecotonic ecosystems (on the borders forest/meadow or plain/slope) and the clearance of areas with herbaceous and bush vegetation.

*Anticipated effect:* Conservation and preservation of the integrity of the feeding habitats and shelters of invertebrates.

4. De-dusting of the production cycle, especially of transport activities in the newly built unpaved roads and prevention of the contamination of roads with oil, fuel and hazardous substances.

*Anticipated effect:* Conservation of the trophic base and the plant-eating insects (imago and larvae)

5. Carry out blasting activities only in the bright part of the day.

*Anticipated effect:* Reduce the disturbance of the night-active invertebrate species

6. Sodium-vapor lamps should be used, which have significantly lower attraction effect on the night insects, compared to the mercury-fluorescent lamps, which emit significant amount of blue and ultraviolet rays. In addition, the number of lamps should be limited to 2 per ha.





*Anticipated effect:* Reduction of the highly attractive effect of lamps emitting rays from the short-wave part of the spectrum, which cause disorientation of night-active insects and their quick death.

### 7.3. Amphibians and Reptiles

1. Construction: At least a year before construction, the inhabiting tortoises must be collected and released back to nature at suitable habitats away from the site of the IP. In order to guarantee the effectiveness of the measure, the IP site must be fenced to restrict the arrival of new tortoises. The removal of the animals should happen prior to construction.
2. Operations: The fence should be maintained. There should be continuous monitoring of the populations of both species and adequate measures should be applied in case of deterioration of their status.
3. Reclamation: Complete restoration of tortoise habitats, where possible.

### 7.4. Fish & Mammals

1. Do not allow the extraction of construction materials for the needs and purposes of the IP from the bed of the Krumovitz River.

*Anticipated effect:* Protection of an important feeding habitat for otters and bats and source of abundance of aquatic invertebrates.

2. Carry out blasting activities only in the bright part of the day.

*Anticipated effect:* Reduce the disturbance of bats.

The mitigation measures discussed above should be applied in a package and not selectively. This type of mitigation measures should be necessary for all investment proposals that are of similar nature, suggest similar negative effects and evaluated (including consideration of the cumulative effect) that can be implemented without conflict with the purpose of conservation of the PZ and areas with conservation status according to the Protected Area Act.

### 7.5. Compensatory measures

The team prepared the Assessment don't propose any compensatory measures cause it is required only in cases of proved significant impact on protected zone. In this case there are no such circumstances.

## 8. Assessment of Alternatives

The IP does not provide alternative sites for the open pit mine, but alternative technologies for the processing of ore.

### 8.1. Zero Alternative

Under Section 8 of the additional provisions of the Ordinance for AC of Plans and Programs with the Conservation Objectives of PZ, "Zero Alternative" is a description of the current situation and its future development in case the suggested IP is not implemented. **The zero alternative is compatible with the conservation goals of the PZ.** There will be no negative impact on the subjects and conservation objectives of the protected zone.

### 8.2. Investment Proposal – Alternative 1

**The Investment Proposal is compatible with conservation objectives of the protected zone.**

### 8.3. Investment Proposal – Alternative 2

Cannot be implemented in view of the conservation objectives of the protected zone and the application of the currently in force Law on Biodiversity and Directive 92/43/EEC.

## 9. Conclusion

**IP Alternative 1 can be implemented** in view of the conservation objectives of the PZ and the application of the Law on Biodiversity and Directive 92/43/EEC currently in force. This must be accomplished with following mandatory implementation of mitigation measures. The IP may be applied provided that satellite deposits Skalák, Sarnák, Kupel and Kaklitsa will not be developed to avoid cumulative impact.