REPUBLIC OF BULGARIA

MINISTRY OF ENVIRONMENT AND WATER

OBOC-68
14 June 2024, Sofia

Subject: *Environmental impact assessment procedure in a transboundary context for the project "Development of lead, zinc and copper ores from Podvirovi and Popovica mines in the area of Karamanica, Municipality of Bosilegrad", Republic of Serbia, in accordance with Article 3 of the Convention on Environmental Impact Assessment in a Transboundary Context (ESPOO)*

DEAR MINISTER VUJOVIC,

This letter is to acknowledge the receipt of letter Reg. No. 0004878622023/24.04.2024, by which you provide the information pursuant to Art. 3 of the Convention on Environmental Impact Assessment (Espoo Convention) on the environmental impact assessment prepared by Bosil-Metal-Bosilegrad for the project for the opening of mines for the extraction of Pb, Zn and Cu ore from the Podvirovi and Popovica ore seams in the Karamanitsa area near Bosilegrad, the construction of a flotation facility for ore beneficiation with auxiliary facilities and the construction of a flotation tailings storage facility.

H. E. Irena Vujovic
Minister for the Environment Protection of Serbia
22-26, Nemanjina Str.
Belgrade, Serbia

Sofia 1000, 22 Maria-Luisa Blvd

Phone: +359 2 940 6194, Fax: +359 2 986 25 33

By this letter I would like to inform you that the Republic of Bulgaria is willing to participate in the EIA procedure in a transboundary context. After detailed consideration of the information provided and based on consultations with all interested parties, we express the following comments on the draft project in accordance with the opinions submitted:

I. Comments on environmental components and factors:

Regarding the component „water":

The EIA Report contains an analysis and assessment of the likely significant environmental impacts, including secondary, cumulative, transboundary, synergistic/simultaneous, short, medium and long-term, permanent and temporary, positive and negative impacts of the implementation of the investment proposal on the relevant environmental aspects (biodiversity, soils, water, air, etc.), while proposing measures to mitigate the impacts of the activities, including measures to prevent, reduce, and mitigate the impacts of the activities on the environment.

The report contains the following omissions and inaccuracies:

- Due to incorrect translation, many of the terms in the text that are not accurately translated do not have a clear meaning and in many cases the text remains un understandable; for example - flotation tailings impoundment- it is not clear to what extent these expressions correspond to the term "tailings impoundment";

- Many of the figures and tables that contain important information have not been translated;

- The figures presented in section 5. Overview of the environmental status of the location and the immediate surroundings of the EIA under consideration, data on the status of surface water, groundwater and mine water in the area of the mines "Podvirovi" and "Popovitsa", including the data from the implemented "Program for Monitoring the Quality of Surface Water and Wastewater on the Territory of the Municipality of Bosilegrad" for the rivers Dragovistica, Lubacska, Karamanitsa and Bistarska for the years 2023, 2022 and 2021 are presented in Tables 5. 14 to 5.18 , but the original testing reports of the relevant accredited laboratory are missing from the report. The tables indicate the applicable standards/norms for the relevant pollutants in the legislation of the Republic of Serbia, but there is no information on which

analytical methods were used for the analyses and in what form the metals copper, zinc and lead were determined - total or dissolved form. This is essential in order to make a correct comparison with the relevant standards and norms for these pollutants in surface waters in the Republic of Bulgaria, as the Bulgarian standards refer to the dissolved form of the metals. There is no analysis of the correspondence between the parameters in the classification system for the assessment of the ecological status of surface waters under the legislation of the Republic of Serbia and those of the Republic of Bulgaria;

- The coordinates of the boundary points of the deposit and the tailings impoundment should be presented in WGS 84;

- The assessment of the current ecological status of the surface waters in section 5 of the Report identified and highlighted the lack of monitoring results for hydrobiological and hydromorphological quality elements, which reduces the reliability of the ecological status assessment and raises the need for a new assessment with higher reliability. This lack is mentioned in several places in the report;

- The groundwater test results that have been analysed to assess the current status of groundwater and the results of radiological water testing - Table 5.19. and Table 5.20. in the report are also in tabular form only, with no laboratory test reports attached. It is therefore necessary to submit the protocols from an accredited laboratory;

- The report lacks an analysis of monitoring data for river and lake sediments, especially with respect to the presence of heavy metals;

- Section 6. Description of the possible significant environmental impacts of the project of the EIA under consideration, we consider that the following possible significant impacts have not been considered and assessed in sufficient detail:

- *Seepage of water from the flotation tailings impoundment has not been investigated and assessed. Acid drainage water and seepage and filtration water from the tailings impoundment may affect surface water and groundwater contamination. The impact of acid mine drainage on environmental quality results in the release of metals from the ores into the environment, making them available to aquatic organisms. Heavy metals cannot be removed from the aquatic ecosystem by self-cleaning processes but*

accumulate in the sediment where they can enter the food chain through biomagnification. The sludge is therefore a significant source of heavy metals;

- *All the possible risks of accidents in case of failure of pipeline systems or failure of the flotation tailings dam wall in case of natural phenomena such as intense snowmelt, high water and flash floods, earthquakes are not considered in sufficient detail, erosion and landslide activities in the area of the tailings impoundment, where the tailings impoundment may overflow or its walls may be destroyed with consequences in transboundary aspect - volley pollution and leakage of sediments and wastewater to the entire catchment area of the Dragovishchitsa River, including the territory of the Republic of Bulgaria;*
- *The groundwater level decline from various activities such as ore and waste transport, ore crushing, grinding and flotation, and waste disposal has not been assessed;*
- *The impact of diffuse transfer of pollutants by air and subsequent deposition in soil and surface water, including in the Dragovishchitsa River catchment area on the territory of the Republic of Bulgaria, has not been assessed - dust, NOx, CO, SO2 gases, other gaseous products after blasting activities, volatile organic compounds, PAHs, PCBs. Dry flotation tailings surfaces (surface emitters) under certain natural conditions (moisture deficit, high temperature, increased wind speed) become significant emitters of dust. Air pollution with suspended particles will lead to diffuse pollution of surface water and open groundwater;*

The EIA Report does not comprehensively and in detail assess the possible significant environmental impacts of the project in transboundary aspect, including the impacts on surface water, groundwater and water protection zones in the Dragovishchitsa River catchment in the territory of the Republic of Bulgaria. The possible such impacts are described in the letter of the Ministry of Environment and Water No. EIA-68/20.09.2021, according to which:

- Potential salvo pollution and leakage of large quantities of sludge and wastewater with very high concentrations of Pb, Zn, Cu and other metals from the flotation tailings in the Karamanitsa River will lead to a transboundary ecological disaster in the Dragovishchitsa

River catchment with significant negative consequences, including for the territory of the Republic of Bulgaria;

- Deterioration of the chemical status of groundwater bodies BG4G00000QN006, Groundwater in Quaternary-Neogene-Kyustendil and BG4G001PtPz125, Pucknatin waters in the Vlahino-Ograzhdeno-Maleshevsko-Osogovsky metamorphites, expressed in the implementation of chemical intrusion of Pb, Zn, Cu, other metals and organic pollutants into groundwater from surface waters of the Dragovishchitsa River;

- The possible deterioration of the surface and groundwater on the territory of the Republic of Bulgaria will limit the existing rights of water users in the area - for drinking and domestic water supply to settlements along the Dragovishchitsa River, for irrigation of agricultural land and other water abstraction purposes;

- Water quality will be degraded in the water protection areas for drinking water supply (WFD): BG4DGW001PtPz125 and BG4DGW00000QN006 - designated under Article 119a, point 1 of the Water Act, as well as the Habitats Directive protected areas BG0000294 Karshalevo and BG0000295 Dolni Koriten - designated under Article 119a, point 5 of the Water Act. Adverse impacts will result in deterioration of the conservation status of the respective Water Protection Areas (WPAs)

- The information presented does not sufficiently analyze the presence, distribution and impact of substances and pollutants defined by Directive 2008/105/EC and Directive 2013/39/EU, as well as other specific pollutants defined according to Directive 2000/60/EEC , as a point and diffuse source of water and soil pollution, both directly and through airborne transmission. It is necessary to carry out the above actions and provide measures to prevent the impact.

- The substances and elements that will enter the waters when washing the equipment and their impact should be considered.

- All pollutants should be considered, their cumulative effect when entering the surface water and the associated groundwater, which may also be affected, and thus the use of the waters of the Dragovishtitsa River and the underground water bodies, and to foresee appropriate measures for the treatment of waste water or water flowing from the mines and the adjacent area in order to prevent direct or indirect contamination of the water with lead, zinc or copper.

- Modern waste water treatment facilities should be provided to treat all expected pollutants, according to the investment activity in the waste water.

- The risk to the environment and human health in the event of emergency or unregulated situations has not been considered sufficiently. It is necessary to consider the risk and provide measures to prevent the impact when such situations arise.

- The project envisages that the tailings storage facility will be built in the riverbed of the Karamanichka River, a tributary of the Golyama River, which flows into the Dragovishtitsa River, which is a transboundary river and enters Bulgaria. The Karamanichka River is planned to pass through a tunnel, which creates a risk of carrying out contaminated water from the tailings storage facility during intense rainfall. It is necessary to assess this risk and provide measures to avoid it.

- The identified significant deficiencies and omissions regarding the presentation and evaluation of the possible significant impacts of the project on the environment, indicated in the considered EIA by its authors, lead to the fact that for insufficiently well represented and evaluated impacts (including those in a transboundary aspect) in Item 8 Description of the measures envisaged to prevent, reduce or eliminate environmental impacts from the Report, sufficiently appropriate measures to reduce and eliminate these possible impacts have not been identified, developed and proposed.

- The development concludes that in the context of the Convention on Transboundary Pollution - the Espoo Convention, based on currently available information, no transboundary impacts are expected, neither during normal operation nor during emergency situations. We believe that such a conclusion is wrongly made and the same is not justified and supported by analyzes of all risks

- The border with Bulgaria is located in the immediate vicinity of the mine itself. It is necessary to ensure a sufficiently large distance from the border with the Republic of Bulgaria in order to limit the impact only on the territory of the Republic of Serbia, given the possible cross-border impact of the activity, including and from the planned blasting activities, on the Dragovishtitsa River and the Struma River on Bulgarian territory and on the underground

water bodies in the area, which are also used for drinking and domestic water supply in these rivers, the soils and the health of Bulgarian citizens.

- The proposed mitigation measures are not specific enough and do not guarantee the protection of transboundary water resources.

- The report does not include an adequate assessment of the cumulative effects that may arise from the combination of this project with other existing or planned projects in the region and the risk of water, soil and air pollution.

The identified significant gaps and shortcomings with regard to the presentation and assessment of the possible significant environmental impacts of the project, as indicated in the EIA by its authors (and subsequently identified by the Bulgarian competent authorities), lead to the fact that for the insufficiently well covered and assessed impacts (including those in the transboundary aspect) in section 8 "Description of measures envisaged to prevent, reduce or remedy environmental impacts" of the Report, no measures have been identified, developed and proposed sufficient enough appropriate measures for decreasing and elimination ot these possible impacts.

Based on the above, the submitted EIA Report in transboundary context for the project "Development of lead, zinc and copper ores from Podvirovi and Popovica mines in the area of Karamanica, Municipality of Bosilegrad", Republic of Serbia is incomplete with regard to water component and should be supplemented taking into account the above findings and comments.

Implementation of the investment proposal for exploitation of lead, zinc and copper ores from the described deposits will lead to pollution of the Dragovishchitsa river, which is a transboundary and will inevitably pollute the Struma river, which is the most important tributary river in the Kyustendil region. This also means potential contamination of the main irrigation water sources in the region as well as a number of drinking water sources.

<u>Regarding the „ambient air" component:</u>

After the report is revised and subsequently assessed, the EIA decision should set out specific requirements to ensure that all necessary measures are taken to limit and minimise fugitive dust

emissions in the ambient air from activities on the mine site and to limit fugitive and organised emissions during subsequent operation.
In addition, we would like to inform you that the latest version of the EMEP/EEA Air Pollutant Emission Inventory Guidebook 2023 has been published on the European Environment Agency's website: https://www.eea.europa.eu//publications/emep-eea-guidebook-2023 , which should be taken into account in future environmental assessment reports.

Regarding the „waste" factor:
In section 3.6 "Types and quantities of emitted gases, water and other liquid and gaseous effluents" and in section 3.6.1 "Parameters on the basis of which the characterisation and classification of waste is carried out. Determination of an index number according to the Waste Catalogue", information is provided on the classification of waste carried out according to six-digit codes which correspond to the List of Wastes of the Commission Decision of 18 December 2014 amending Decision 2000/532/EC concerning the list of wastes pursuant to Directive 2008/98/EC of the European Parliament and of the Council, with estimated generation quantities determined only for certain types of waste. The information presented in this way is incomplete and it is not possible to correctly assess the potential impacts that the waste generated will have on the environment and human health. In this respect, the report should be refined with regard to:
- the types of waste generated during mine construction and their estimated quantities;
- the types of waste generated during mine operation and their estimated quantities;
- further information on the regulations under which the waste generated will be transferred for subsequent treatment.

II. Regarding the impact of the investment proposal (IP) on human and the possible health risk from the implementation of the investment proposal:
According to the documentation provided, the operational area of the investment proposal under consideration covers the territory of the Podvirovi and Popovitsa deposits (Konyev kamiq) in the area of the village of Karamanitsa, Municipality of Bosilegrad, Republic of

Serbia, as well as the area between them and where the flotation and tailings storage facility is planned to be built.

The IP envisages the operation of a closed (underground) mine for the extraction of lead-zinc ore by blasting, a new flotation plant, a flotation facility for ore beneficiation, a tailings storage facility for the disposal of flotation waste and ancillary facilities. Following preliminary pilot mining, a thirteen-year mine life is currently planned with an annual capacity of 250 000 tonnes per year for both deposits (125 000 tonnes per year for each deposit).

The procedure is being considered in a cross-border context due to the proximity of the site to the border with the Republic of Bulgaria.

The area of the IP is located in Southeastern Serbia, 35 km south-west of the town Bossilegrad at the southern part of the Bela Voda mountain. The water catchment area is of Karamanicka river, which after 20 km flows into the Dragovishchitsa river before its entry into the Republic of Bulgaria.

In spite of the proximity of the IP to the border of the Republic of Bulgaria, the EIA does not indicate the settlements, areas and sites affected on the Bulgarian side and the specific distances to the same. In this respect, the cross-border health assessment is of a general nature, and the EIA needs to be supplemented by considering and assessing the environmental and living environment factors and components on the territory of the Republic of Bulgaria in the light of the following findings regarding risks and insufficient information:

1. The EIA does not exclude the possibility of chemical contamination of surface and groundwater. This is also noted by the experts who prepared the EIA report with the description of significant risk of impact with corresponding negative consequences in Tables 6.14, 6.16 and 6.17. Hazardous wastewater (mainly mine water and flotation process water) are a potential pollutant, especially in the event of an accidental release of water from the facility, which may occur for technical reasons, extreme weather events, e.g. heavy rainfall, etc. Even in normal operation mode, due to the planned use of gravity treatment only (settling tanks), there is a risk of contamination with mine water of the natural surface water reservoir (Karamanicka River) and hence the waters of the Dragovishchitsa, including the territory of the Republic of Bulgaria, and in a distant aspect also the waters of the Struma river.

During the exploitation of the deposit, dewatering of the mining galleries will be required, which will lead to changes in the quantity and directions of groundwater movement and hydraulic gradients. It is also anticipated that mine water will be generated throughout the mine life and after mine closure, which may affect surface and groundwater contamination.
The above is supported by analytical results for surface and groundwater quality "before" and "after" the current pilot flotation facility presented in the EIA. In Tables 5.9 and 5.10, it is noticeable that for surface water the electrical conductivity changes from 20.3 s/cm upstream of the pilot plant to 214 s/cm downstream of the pilot plant, dissolved oxygen also changes from 9.8 mgO/l to 8.9 mgO/l, chloride from 5 mg/l to 8 mg/l, sulphate from 6.66 mg/l to 43.7 mg/l.
In Table 5.19 presenting the groundwater quality, there is a change in electrical conductivity from 164 µS/cm to 477 µS/cm, chloride from 6 mg/l to 12 mg/l, sulphate from 10.5 mg/l to 141 mg/l, bicarbonate from 164.7 mg/l to 201 mg/l, total hardness from 5.7 N to 22.2 N.
Analyzing these data, it can be concluded that mining and flotation activities generate distinct contamination of surface and groundwater.
Therefore, it is particularly important in a transboundary context that the developer ensure that additional technical facilities are constructed to treat the wastewater to the required environmental discharge standards through the construction of chemical and physico-chemical wastewater treatment facilities, as no such facilities are envisaged in the project. Reliable monitoring of the quality of the discharged effluents should be ensured in order to ensure compliance with the individual emission limits.
It is not clear from the EIA report what percentage of the production effluent is intended to be used for turnover, therefore it should be supplemented with this information.
The EIA Report does not provide evidence from mathematical modelling of the limits of potential contaminant dispersion via surface water and groundwater in an emergency. The conclusions drawn are declarative and do not rely on predictive contamination scenarios and therefore cannot be used to assess the impact on drinking water quality, including in a transboundary context for water sources in Bulgaria along the Dragovishchitsa river. In view of this, the EIA should also be supplemented with this information in the aspect described.

In relation to all of the above, and taking into account the topography of the adjacent mountainous terrain, the distances mentioned above and the review of the characteristics of the investment proposal carried out in the EIA report, it can be summarised that one of the main vectors for potential transboundary pollution from the operation of the site is surface water. A potential deterioration of the water quality of the Karamanichka river, respectively, and of the Dragovishchitsa river from contaminated mine or flotation water, tailings, ingress and leaching of hazardous reagents, waste or contaminated soils into the riverbed, represents a potential health risk to the population of the Republic of Bulgaria.

Considering that in the Kyustendil valley during the summer dry season the river waters are used for irrigation and about 5 km upstream of Bosilegrad the Lysin dam is built, the waters of which are used for the water supply of Bosilegrad, the health risk for the population from its contamination can be considered high, including through the agricultural food chain by consuming products irrigated during their cultivation with contaminated waters.

With regard to the above described health risk related to the spread of pollution via surface water, the EIA report should consider and assess, including on the territory of the Republic of Bulgaria, the risk for all affected settlements along the Dragovishchitsa river , and not only the closest ones. In this respect, from a health perspective, the EIA report should also assess the risk to the water from the water intakes used for drinking water supply for all the settlements along the Dragovishchitsa river .

2. The toxicological characteristics of potassium ethyl xanthate (xanthogenate) (CAS 140-89-6) and potential health effects from exposure are not addressed in the EIA report, which is an omission and should be completed.

3. The EIA report does not present data on other industrial enterprises or activities that are potential sources of contamination of the living environment on the territory of the municipality of Bosilegrad. No assessment has been made of the possibilities of combined, complex, cumulative and remote effects of the factors identified, including in a transboundary aspect, and the report should therefore be supplemented.

4. The EIA report does not present in sufficient depth the health and demographic characteristics of the potentially affected population in order to assess the acceptability of the

investment proposal. The demographic indicators for the municipality of Bosilegrad and the settlements along the river are not presented for Karamanicka and Dragovishchitsa rivers, including the territory of the Republic of Bulgaria. Data on the general and specific morbidity of the population by nosological units and data on mortality by cause of death for the municipality of Bosilegrad are not presented when compared with the data at the county level (Pcin County) and for the country. Such information should be supplemented in the report.
5. The EIA study lacks data from radiological monitoring conducted in the area of Popovitsa deposit. It is stated that radiological monitoring of soils and water is planned during the operation of the facilities, but the frequency is not indicated. In this respect, the EIA report should provide data on the radionuclide content of ore from both deposits, as well as data on soils and water in the area of the Popovitsa deposit.

We strongly oppose the planned use of cyanides in the treatment of the ore. The class of cyanide compounds (cyanides) includes a large number of highly toxic substances which are characterised by their rapid action on the human organism. The cyanide compounds have multiple notifications for a number of toxicity classes. The most toxic are sodium and potassium cyanides (NaCN, KCN), which have good solubility in water and form cyanide anion (CN -) in significant concentrations. Its action consists in blocking oxidative enzymes, as a result of which tissue respiration is stopped. Similar is the action of all other cyan compounds which are capable of cleaving off hydrogen cyanide in the body, or forming cyanide anion. This conclusion is supported by the example of the environmental and health consequences of the cyanide spill from the tailings dump at Baya Mare (Romania) in 2000, which led to an environmental disaster in the river basin Tisza.
There are numerous active initiatives by the European Parliament and national governments to introduce a ban on the use of cyanide technology, including a 2010 European Parliament Resolution on a general ban on the use of cyanide in mining technologies in the European Union. Cyanide extraction of metals from ore has equivalent and comparatively safer alternatives with a view to protecting the environment and human health, for example by using other leaching reagents.

The above is supported by the opinion of the authors of the EIA report, presented in section 4.3.2, that the investment proposal "...applies an outdated choice of reagents, according to which sodium cyanide (NaCN) is used as a zinc depressant. In modern mining practice, sodium cyanide is excluded from use due to possible negative effects on the environment, water, air, soil, living organisms. The process of changing flotation reagents and replacing cyanide with one of the other reagents has not yet been considered at Bosil-Metal's ore preparation facilities. Given that the alternative exists (proven in world practice), it is necessary for the mine to consider, in accordance with customary practice, replacing cyanide with a less toxic and environmentally acceptable reagent."

We consider that the EIA report presents a technology that is potentially hazardous in a transboundary context, including due to the application of cyanide extraction to minerals and due to the risk of migration of contaminants by water. The investment proposal does not foresee industrial waste water treatment facilities with physicochemical and chemical treatment, including neutralisation of the active reaction (pH), before discharge into natural surface water bodies. From a health point of view, this is a serious technological deficiency which does not guarantee the protection of the purity of surface and groundwater sources in a transboundary context.

In view of all the above, from a health point of view, a positive assessment of the acceptability of the investment proposal cannot be given.

III. Public interest and public consultation:

A public consultation should be carried out once the EIA report has been positively assessed by the competent authority.

Following the public access to the EIA documentation provided by the Bulgarian side, there are opinions from associations and organizations, which we provide to you with this letter, in order to take into account their motives, recommendations and comments when conducting the EIA procedure in a transboundary context.

Taking into account the sensitivity of the investment proposal, I insist that after reflecting of the above remarks and comments in the report, a public discussion of the investment proposal be organized also on the territory of the Republic of Bulgaria (in Kyustendil and Sofia).

Based on all of the above, we inform you that the information in the EIA Report should be revised and supplemented according to the described comments and resubmitted to the Republic of Bulgaria for adjudication.

Please accept, Madam Minister, the assurance of my highest consideration and readiness for successful future cooperation.

Annexes:

1. Copy of the opinion of the Association "Eco Surdulitsa" with registration № OVOS-68/11.06.2024.

2. Copy of the opinion of the Balkanka Association with № OVOS-68/10.06.2024.

3. Copy of the opinion of Kyustendil Municipality with exh. № 92-00-348/28.05.2024.

4. Copy of opinion from Initiative Committee Malko Belovo, town of Belovo with entry No. OVOS-68/13.06.2024;

5. Copy of opinion from the Initiative Committee at the villages of Gornoslav, Dolnoslav, Cherven, Oreshets and Dobrostan with entry No. OVOS-68/13.06.2024.

Yours sincerely,

Petar Dimitrov
Minister of Environment and Water