ADRIATIC METALS PLC

VARES PROJECT

SURFACE MINERAL WASTE DISPOSAL PLAN

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Contents

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This document has been developed/revised as indicated below and described in the revision record on the following page. Please destroy all previous revisions.

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1.0	29/07/21	Joseph Crummy Danira Zanović	Vildana Mahmutović	9

ISSUED FOR: [x] Design [x] Construction [x] Operations [ ] Other _____

INTRODUCTION

1.0 Purpose and Scope

Eastern Mining d.o.o. is owned and operated by Adriatic Metals PLC and located in Bosnia and Herzegovina (BiH). Eastern Mining d.o.o. is the holder of a concession for exploration and exploitation in Vareš (BiH). Since 2017, ADT has been conducting research at several sites in the municipality of Vareš, for the first time since the 1980s. The company's focus is on exploring minerals that have the potential to grow the company. The ultimate goal is to revive the mining industry in the municipality of Vareš, by exploiting new and existing ore deposits. New potentials have been identified in Rupice, where research and exploitation of lead, zinc and barite have been carried out before. The deposits were further expanded and subjected to extensive research and contained significant amounts of lead, zinc, silver, gold, copper and barite. The project, named Vares Project is polymetallic mine, and has attracted reputable foreign investors in BiH. In many ways, this research project is unique in post-war BiH, both in terms of investment size and development potential.

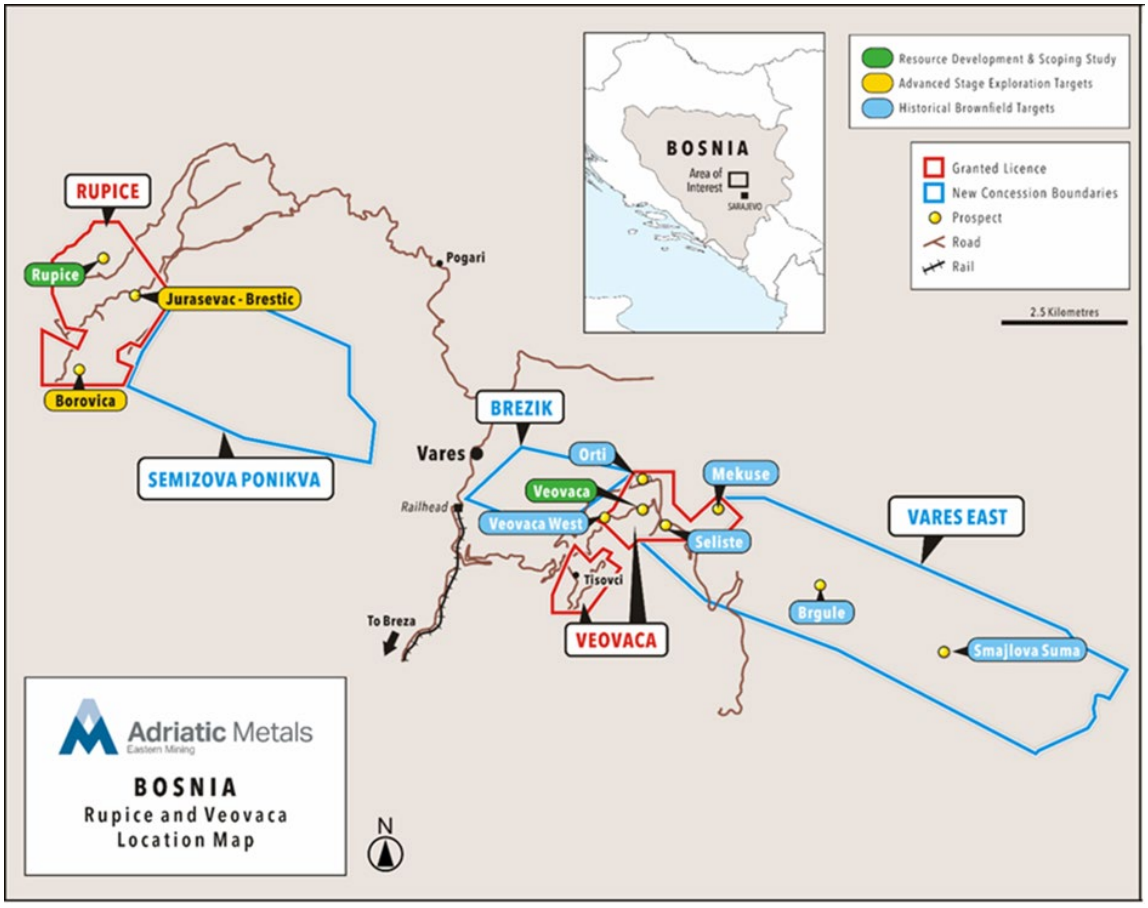

Figure 1.1. Map showing the location of the Vares Project

This Surface Mineral Waste Disposal Plan (SMWDP) is developed to provide further details on the measures to be implemented during the operational phase of project to ensure that the actual environmental impacts are consistent with those evaluated in the Environmental and Social Impact Assessment (ESIA). This plan also provides the mechanism to adapt new measures throughout the ongoing construction and operation to improve the management and identification of waste rock characteristics.

The SMWDP represent one component of the overall Environmental Social Management Strategy (ESMS). The ESMS includes a number of commitments and component management plans which together form the basis for the ongoing operation of the Eastern Mining.

The Plan is in compliance with national legislation, requirements of international financing institutions (e.g. IFC Performance Standards, EBRD Performance Requirements) and other applicable good practices. This Plan is a living document and the responsibilities, procedures and compliance actions should be updated as appropriate.

2.0 Legislative Requirements and Standards

Eastern Mining intends to implement practices in accordance with international practices in addition to local law legislation, respecting principles and policies of the European Bank for Reconstruction and Development (EBRD) and International Finance Corporation (IFC).

2.1 National Legislation

- Environmental Protection Law ("Official Gazette of the Federation of BiH", No. 15/21)
- Law on Waste Management ("Official Gazette of the Federation of BiH", No. 33/03, 72/09 and 92/17)
- Mining law ("Official Gazette of the Federation of BiH", No. 26/10)

2.2 International requirements

- European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 1
- European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 3
- European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 4
- IFC PS1: Assessment and Management of Environmental and Social Risks and Impacts,
- IFC PS3: Resource Efficiency and Pollution Prevention,
- IFC PS4: Community Health, Safety, and Security,
- IFC General EHS Guidelines: 1.5 Hazardous Materials Management, April 30,2007
- IFC General EHS Guidelines: 1.6 Waste Management, April 30,2007

3.0 Roles and Responsibilities

Principal roles and responsibilities for the implementation of this plan are outlined below.

Roles	Responsibilities
Executive Director	• Ensure adequate resources are provided for implementation of this Plan. • Ensure the Plan is distributed to all relevant Contractors and subcontractors.
Process Manager	• Management over Contingency Permanent Waste Rock Dump Facility • Management over Contingency Temporary Waste Rock Dump Facility • Management over Surface Disposed Tailings Materials
Environmental and Social Manager	• As required, review and update the Plan (in coordination with the Project Company Environmental and Social Management Associate). • Ensure technical support is provided to Contractors for implementation of the Plan. • Ensure related trainings are provided by the contractors and the Project Company, through review of training records and related training documents.
Environmental and Social Management Associate	• Rock drainage monitoring and visual inspections

4.0 Surface Mineral Waste Disposal Plan

Metals mining typically generates waste rock that needs to be disposed of and normally is stored on surface, where it remains permanently, as waste rock dumps, under atmospheric conditions. In open-cast mining these waste rock dumps can be substantial in size, in underground mining scenarios they are typically much smaller in volume. These waste rocks can be reactive under atmospheric conditions and can lead to the generation of acidic drainage and sulphate/metals leaching, and release of contaminated waters to the surrounding environment, if disposal is not arranged to minimize reaction between the waste rocks and atmospheric oxygen and moisture. Mine development needs to take this into account, and the science of acid rock drainage (ARD) is used to predict and understand the reactivity of the waste rock masses, with a view to arranging permanent storage in a manner that minimizes future environmental impacts.

The waste rocks that will be produced by the Rupice mining operation have been comprehensively investigated in terms of reactivity under atmospheric conditions and the potential for acid generation and sulphate/metals leaching. The investigation was carried out using rigorous scientific methodology and industry-standard test-work. The work was performed on-site at Rupice using a combination of geological and chemical expertise. The waste rock package and how it would behave under long-term storage under atmospheric conditions has been understood.

As the mine plan developed it was understood that there would actually be no need for permanent surface disposal of waste rock materials. All waste rock would be sent back underground as backfill, mixed with tailings and a lime-based cement. The lime-based cement will be capable of countervailing the acid generative tendencies of the tailings and the most reactive waste rock materials. The question of the environmental risk from permanent surface disposal of waste rock has been investigated thoroughly, but is not actually relevant under the current mine plan, since all waste rock will be sent back underground as backfill.

The optimized Rupice mine plan envisages ore grade and waste rock materials being temporarily stored on a platform near the main decline entrance. Ore grade materials will be regularly transported for processing at Veovaca, and waste rock materials will be regularly utilized for the production of backfill and sent back underground. The final configuration at the end of mine-life envisages no ore grade or waste rock materials remaining on-surface. As such, ore and waste rock storage is to be temporary, spanning the mine-life but not extending beyond.

Ore grade materials have been demonstrated experimentally to be prone to acid generation and sulphate/metals leaching if exposed to atmospheric conditions for significant lengths of time. Waste rock materials include reactive waste rock that is prone to relatively mild acid generation and sulphate/metals leaching, and unreactive waste rock that is not prone to acidification but may leach sulphate and metals under near-neutral conditions. It will be predictable from the mine-schedule what quantities of ore, reactive waste rock and unreactive waste rock will be stored at any given time during mine-life. The ore and waste rock stockpiles will be affected by frequent, seasonally controlled rainfall and snow-melt flushing and the run-off will be captured and treated using a dedicated lime neutralization plant followed by settling of slimes. The settled slimes will be trucked to the tailings management facility at Veovaca for final disposal. The neutralized and slime-free product of this treatment will be either added to the main mine water supply and the mix utilized for backfill, or will be discharged to the environment. Adequate water treatment test-work will be performed to ensure that the final treated water will be fit for use in backfill production or for environmental discharge.

The disposal of waste rock as underground backfill has been validated as viable and environmentally risk-free via the testing of the leaching characteristics of the final backfill waste in a monolithic leaching test. The backfill will comprise tailings, broken waste rock and lime cement. The amount of lime cement utilized can be demonstrated theoretically to be adequate to countervail the acid generative potential of the tailings plus the reactive and unreactive waste rock types in the final backfill mix. The monolithic leach test demonstrates experimentally that the final backfill mix is not prone to acid generation or sulphate/metals leaching.

The temporarily stockpiled ore and waste rock materials will pose no significant environmental risk on account of the specific intention to capture and treat runoff before environmental discharge or to re-use the water for backfill production or underground mining purposes. The permanent disposal of waste rock materials, both reactive and unreactive waste rock, underground, as a backfill mix containing enough lime cement to countervail the sulphidic tailings and the partially sulphidic waste rock, will pose minimal long term environmental risk from acid generation and metals/sulphate leaching. No waste rock or ore grade materials will be left on-surface at the time of mine closure.

4.1 Contingency Permanent Waste Rock Dump Facility

The plan for temporary stockpiling of ore-grade materials together with waste-rock that will, in the course of operations, be sent for mineral processing and backfill production respectively visualises a highly optimized scenario that will leave no materials on-site requiring permanent disposal. A contingency scenario that envisages changes to this optimized plan during mine-life and leaves limited amounts of waste-rock for permanent disposal, is outlined here.

The originally envisaged site for the waste-rock dump is to be put to this potential contingency use. The site lies to the north and uphill of the main mine infrastructure. It sits on Jurassic

limestone substrate, a lithology that has been demonstrated to be the best acid neutralizing geological material on the project site. A limited area of the original waste rock site is to be reserved for a contingency waste rock dump. The site is not to be prepared in advance, it will simply be reserved for this contingency use and will be prepared if and when deemed necessary. In the event that the contingency waste rock dump is to be used, topsoil and loose regolith will be stripped and stockpiled in the immediate geographic vicinity, and the upper surface of the limestone substrate will be mechanically broken up to generate a basal neutralizing layer. A HDPE liner will be placed on top of this broken substrate, the purpose of which is to prevent effluent escape down karstic features in the limestone. Waste rock is to be dumped onto this liner. It will be recorded in real time whether the waste rock disposed is reactive or unreactive in nature; the engineers will provide this information using the reactive rock wireframe defined around the Rupice orebody. It has been experimentally demonstrated that co-disposal of reactive waste rock with limey waster rock prevents acidification of the former. With this in mind, depending on the proportion of reactive material versus unreactive material dumped at any give time, the appropriate amount of Jurassic limestone will be blended with the dumped waste rock to ensure this mitigating effect. The limestone will be derived via excavation in the immediate geographical vicinity of the waste rock dump. At the end of mine-life, the waste rock dump will be contoured and stockpiled limestone regolith and topsoil will be applied to the top surface of the dump. Recultivation will proceed using appropriate local flora.

4.2 Contingency Temporary Waste Rock Dump Facility

The plan for temporary stockpiling of ore-grade materials together with waste-rock that will, in the course of operations, be sent for mineral processing and backfill production respectively visualises a highly optimized scenario that will store variable quantities of waste rock temporarily on the same platform as the ore stockpiles. The optimization envisages a maximum of 750,000 tonnes of waste rock to be temporarily stored in this configuration during mine-life. A contingency scenario that envisages changes to this optimized plan during mine-life and involves larger quantities of waste rock than can be accommodated on the stockpile platform, is outlined here.

The originally envisaged site for the waste-rock dump is to be put to this potential contingency use. The site lies to the north and uphill of the main mine infrastructure. It sits on Jurassic limestone substrate, a lithology that has been demonstrated to be the best acid neutralizing geological material on the project site. A limited area of the original waste rock site is to be reserved for a contingency waste rock dump. The site is not to be prepared in advance, it will simply be reserved for this contingency use and will be prepared if and when deemed necessary. In the event that the contingency waste rock dump is to be used, topsoil and loose regolith will be stripped and stockpiled in the immediate geographic vicinity, and the upper surface of the limestone substrate will be mechanically broken up to generate a basal neutralizing layer. Excess waste rock will be temporarily dumped on this surface. Any percolation through the dumped material will report naturally to the mine drainage system,

which is situated directly under this position, and will be utilized for operational purposes. At the end of mine-life all this temporarily dumped waste-rock will have been utilized as backfill and the site will be restored via the placement of stockpiled limestone regolith and topsoil followed by recultivation using appropriate local flora.

4.3 Surface Disposed Tailings Materials

A proportion of the tailings materials from the Rupice operation will be disposed on-surface at Veovaca. A dry-stack tailings facility is to be constructed for this purpose. The tailings materials will be reactive and acid generative, and prone to the metals and sulphate leaching under atmospheric conditions. The dry stack tailings facility will expose these materials to atmospheric conditions during mine-life, but in a compacted form to minimize water infiltration. Periodic encapsulation with non-reactive, non-acid-generative rock materials will be practiced during mine-life, and the tailings materials will thus be isolated from direct rainfall impact before acid generative and leaching reactions start in earnest. The combination of compaction and periodic encapsulation will minimize the opportunity for atmospheric influence in the form of air and water infiltration to the reactive materials and can be expected to prevent acidification during mine-life. Any run-off from the tailings stack will be captured at the toe of the facility and fed into the process plant water supply system and will be treated before being used as process water. On closure, the dry stack facility will be finally encapsulated in non-reactive, non-acid generative rock material, an erosion resistant rock layer, and finally stockpiled topsoil ,before being recultivated with locally derived flora.

The periodic encapsulation, final encapsulation and application of an erosion resistant layer will require suitable non-reactive, non-acid-generative rock materials. Appropriate materials have been identified within the geology of the immediate project area, and are available from currently commercially quarried sources or from the existing Veovaca pit wall. The exact materials to be finally used will be decided as the project advances into production.

4.4 Optional Post-Closure Passive Treatment

The final processing of ore stockpiles and the disposal of all waste rock materials underground will leave no materials of acid generative nature or prone to metals/sulphate leaching on-surface after mine closure. No requirement is envisaged for any supplementary long-term environmental safeguards, but regular monitoring of stream-courses draining the mine-site will pick up any ongoing impacts and will advise on any action needed at Rupice. At Veovaca, similar post-mining surface monitoring will be performed downstream of the Veovaca pit, the tailings stack and the reclaimed and recultivated process plant-site. At both the Rupice and Veovaca sites the option of utilizing passive treatment of any residual impacted waters identified is being kept open and any necessary measures will be well researched and the facilities designed before mine closure. The post-closure monitoring will advise the exact

facilities that may or may not be used. The immediate project geology includes a variety of materials that can be utilized in a number of passive treatment options.

5.0 Monitoring and Reporting

Monitoring of rock drainage will be undertaken to determine whether construction or operational activities are causing adverse impacts upon the surrounding environment. Monitoring points will be defined during construction phase, those are spots where all effluent is collecting and potentially can go into environment. Samples will be carried out after heavy rainfall events or in snow meting period, if appeared. Visual inspection is necessary at least once a week.

The following parameters need to be measured in in-house laboratory, and when necessary, can be send to external laboratory for check:

- *Physical-Chemical Parameters* (pH, Total dissolved solids TDS, Total suspend solids TSS, Conductivity, Dissolved oxygen DO, Turbidity NTU, Ammoniacal nitrogen)
- *Major Ions:* (Alkalinity-total as bicarbonate, Ionic balance, Carbonates, Calcium, Magnesium, Sodium, Potassium, Chloride, Sulphate, Fluoride, Phosphate)
- *Minor Ions:* (Aluminum, Arsenic, Barium, Boron, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Selenium, Tin, Zinc, Thallium)

Results will be in database, with tracking the trend and will be available to all responsible parties.

All water monitoring (surface and groundwater) will be in accordance with the Water and Wastewater Management Plan.

In summary, monitoring includes the following:

- Rock drainage monitoring and visual inspections will be undertaken following heavy rainfall events or in snow melting period, during the life of the emplacement to identify any issue with the proposed management measures. If acid generation is identified, monitoring of rock drainage would increase in frequency; and
- Visual inspections of waste rock areas and water quality monitoring will be undertaken if seepages are detected.

6.0 Training

Required number of training programs will be provided for the project personnel working with waste rocks, as well as the environmental team, and relevant subcontractors.

Regular internal inspections will be made to ensure that the mitigation measures indicated in this Plan are applied during project.

7.0 Review and Update

The results of monitoring will be reported to responsible parties to ensure that the project activities comply with the national legislation and international standards.

Depending on the monitoring results, Surface Mineral Waste Disposal Plan will be reviewed and updated when necessary.