



ADRIATIC METALS PLC
VARES PROJECT
AIR QUALITY AND GHG MANAGEMENT PLAN

OCTOBER 2021

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AIR QUALITY AND GHG MANAGEMENT PLAN

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

Revision	Date	Authors	Reviewed	Pages
1.0	August 2021	Goran Prajo	Vildana Mahmutović Kate Harcourt	23
2.0	October 2021	Goran Prajo Vildana Mahmutović	Vildana Mahmutović	24

ISSUED FOR: Design Construction 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). The ultimate goal is to revive the mining industry in the municipality of Vareš, by exploiting new and existing ore deposits. 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.

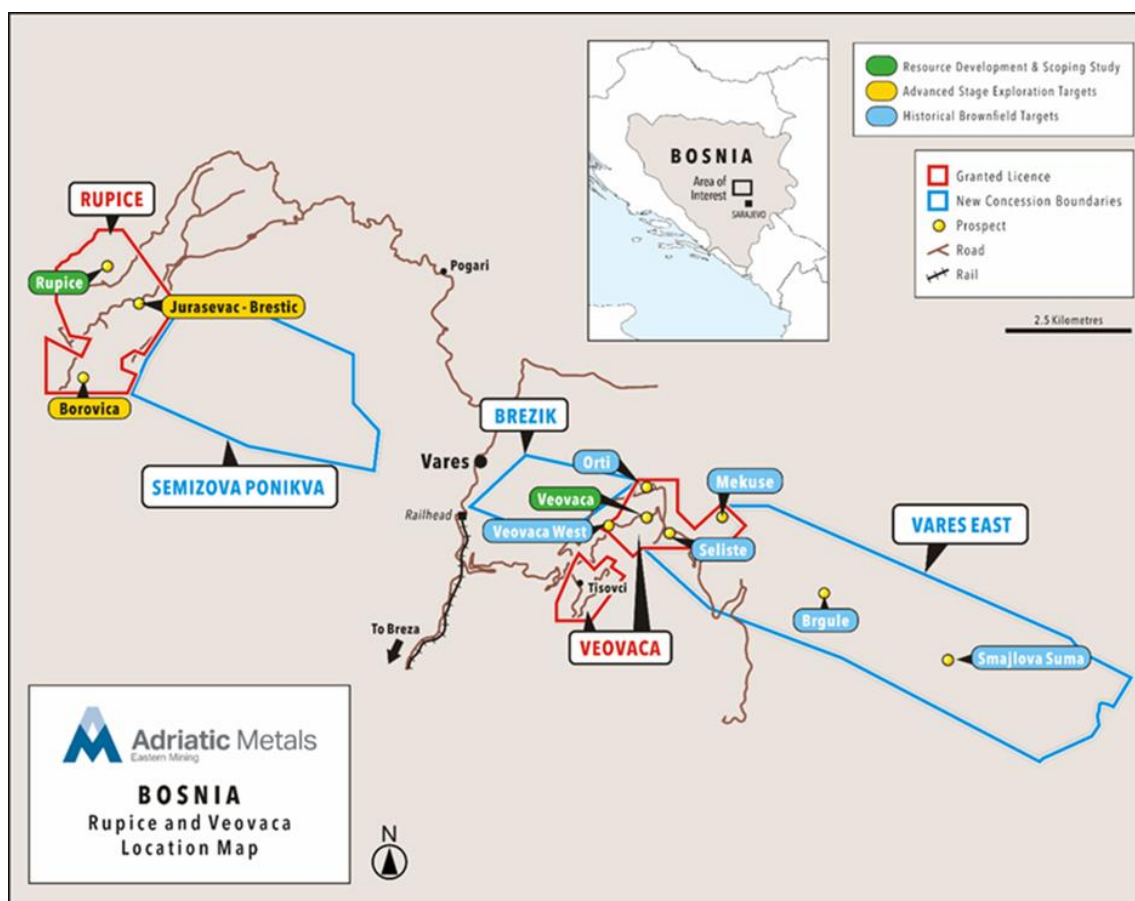


Figure 1.1. Map showing the location of the Vares Project

The purpose of the Air Quality and GHG Management Plan (AQGHGMP) is to describe the potential risks to air quality, which are related to project activities, and to consider and determine protection measures that would prevent or mitigate negative impacts. The plan contains information on how the procedures, their effectiveness and measures will be

monitored in case of exceeding the limit values. The aim of this plan is to achieve compliance with the standards related to air emissions and ambient air quality and to mitigate long-term effects on sensitive receptors (human and ecological) through several exposure routes.

The scope of the plan will apply to all works and activities related to the Eastern Mining project, that is to the concession area of the project, including employees, contractors, and subcontractors working for Eastern Mining.

This plan is in compliance with other management plans like with

- Traffic Management Plan
- Contractor Management Plan

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 Air Protection ("Official Gazette of the Federation of BiH", No. 33/03 and 4/10)
- Rulebook on air quality monitoring ("Official Gazette of the Federation of BiH", No. 12/05 and 9/16)
- Rulebook on monitoring of air pollutant emissions ("Official Gazette of the Federation of BiH", No. 9/14 and 97/17)
- Rulebook on Emission of Volatile Organic Compounds ("Official Gazette of the Federation of BiH", No. 12/05)
- Rulebook on Air Emission Limit Values from Combustion Plants ("Official Gazette of the Federation of BiH", No. 3/13 and 92/17)
- Rulebook on Limit Values for Emissions of Pollutants into the Air ("Official Gazette of the Federation of BiH", No. 12/05)
- Rulebook on gradual exclusion of ozone depleting substances ("Official Gazette of the Federation of BiH", No. 39/05)

- Rulebook on conditions for measurement and control of sulphur content in fuel ("Official Gazette of the Federation of BiH", No. 6/08)
- Rulebook on the manner of monitoring air quality and defining the types of pollutants, limit values and other air quality standards ("Official Gazette of the Federation of BiH", No. 1/12, 50/19 and 3/21).

2.2. International requirements

Air quality guidelines for mining activities are set out in the IFC guidelines on general EHS. They were adopted from the World Health Organization (WHO) Guidelines on Air Quality and Interim Air Quality Targets. The EBRD's E&S policy refers to the standard set out in the relevant European Union directives (Directive 2008/50/EC).

WHO and EU standards focus on PM10 and PM2.5 because, according to health research, their guidelines suggest that this particle size poses the greatest risk to human health. Total suspended particles (TSP) are generally associated with unpleasant effects such as soiling, visual influences and deposition in the eyes and nose. They are not considered to pose the same health risks and no WHO/EU guidelines have been published specifically for the TSP.

This plan also follows the Requirements of the European Bank for Development and Reconstruction (EBRD), regarding guidelines.

Table 1. EBRD Guidelines

PR 3: Resource Efficiency and Pollution Prevention and Control	This PR outlines an approach to climate impacts and greenhouse gas (GHG) emissions, resource management and pollution, in addition to minimize and managing risks and impacts associated with hazardous substances.
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This plan also follows the Requirements of IFC, regarding guidelines:

- 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: 1.1 Air Emissions and Ambient Air Quality, April 30,2007

Air Quality standards relevant to the Project and to be used for the ESIA are determined based on the most stringent values applicable to the Project. These are defined in table 2. and 3. below.

Table 2: Ambient Air Quality Guidelines Applicable to the Project

Pollutant	National Standards	EU Air Quality Standards ¹	WHO/IFC Guideline ²
Dust Deposition Rates	<i>200 mg/m²/day 350 mg/m² measured over a 4-week period</i>	-	-
Total Suspended particles (TSP)	-	-	-
PM ₁₀	40µg/m ³ annual mean 50µg/m ³ 24 hour mean	40µg/m ³ annual mean 50µg/m ³ 24 hour mean	<i>20µg/m³ annual mean 50µg/m³ 24 hour mean</i>
PM _{2.5}	20µg/m ³ Annual mean	25µg/m ³ 24 hour mean	<i>10µg/m³ annual mean 25µg/m³ 24 hour mean</i>
SO ₂	<i>50µg/m³ annual mean</i> 125µg/m ³ 24hour mean 350µg/m ³ 1-hour mean	125µg/m ³ 24hour mean 350µg/m ³ 1-hour mean	<i>20µg/m³ 24-hour mean 350µg/m³ 1-hour mean</i>
NO ₂	40µg/m ³ annual mean 85µg/m ³ 24hour mean 200µg/m ³ 1-hour mean	40µg/m ³ annual mean 200µg/m ³ 1-hour mean	<i>40µg/m³ annual mean 200µg/m³ 1-hour mean</i>
Carbon Monoxide (CO)	3 mg/m ³ annual mean 5 mg/m ³ 24hourmean 10 mg/m ³ 8-hourly mean	10 mg/m ³ 8-hourly mean	30 mg/m³ 1hour mean 10 mg/m³ 8-hourly mean
Lead (Pb) in total dust	<i>0.1 (4-week period)</i>	-	-
Cadmium (Cd) in total dust	<i>0.002(4-week period)</i>	-	-
Zinc (Zn) in total dust	<i>0.4(4-week period)</i>	-	-
Titanium (Ti) in total dust	<i>0.02(4-week period)</i>	-	-
Arsenic (As) in total dust	<i>0.004(4-week period)</i>	-	-
Nickel (Ni) in total dust	<i>0.015(4-week period)</i>	-	-
Mercury (Hg) in total dust	<i>0.001(4-week period)</i>	-	-
Wood Dust	-	<i>3 mg/m³ 8-hourly mean</i>	-

Table 3: Emission Limit Values

Parameter	EU Medium Combustion Plants Directive (mg/Nm ³) ³	EU Industrial Emissions Directive (mg/Nm ³) ⁴	IFC's Emission Guidelines for Small Combustion Facilities Emissions (3MWth – 50MWth) ⁵
Sulphur oxides	400	400	0.5 percent Sulphur or lower percent Sulphur if commercially available without significant excess fuel cost

¹ European Union, Air Quality Standards under Directive 2008/50/EU

² World Health Organization (WHO). Air Quality Guidelines Global Update, 2005

³ Directive (EU) 2015/2193 of the European Parliament and the Council of 25 November 2015 on the limitation of emissions of certain pollutants into the air from medium combustion plants

⁴ Directive 2010/75/EU of the European Parliament and the Council on industrial emissions

⁵ IFC's General EHS Guidelines: Environmental - Air emissions and ambient air quality

Nitrogen Oxides	300	300	N/A
Total suspended particulates	20	30	96 ppm (Electric generation) 150 ppm (Mechanical drive)

Table 4. IFC Performance Standards and EBRD Performance Requirements - Key Relevant Requirements Roles and Responsibilities

	Greenhouse Gases	Climate Change Mitigation & Adaption
IFC Performance Standards	<p>PS1 "The risks and impacts identification process will consider the emissions of greenhouse gases, the relevant risks associated with a changing climate and the adaptation opportunities, and potential transboundary effects, such as pollution of air, or use or pollution of international waterways."</p> <p>PS3 "Performance Standard 3 recognizes that increased economic activity and urbanization often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. There is also a growing global consensus that the current and projected atmospheric concentration of greenhouse gases (GHG) threatens the public health and welfare of current and future generations. At the same time, more efficient and effective resource use and pollution prevention and GHG emission avoidance and mitigation technologies and practices have become more accessible and achievable in virtually all parts of the world."</p> <p>"In addition to the resource efficiency measures described above, the client will consider alternatives and implement technically and financially feasible and cost-</p>	<p>PS1 "The risks and impacts identification process will consider the emissions of greenhouse gases, the relevant risks associated with a changing climate and the adaptation opportunities, and potential transboundary effects, such as pollution of air, or use or pollution of international waterways."</p> <p>PS4 "Performance Standard 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration and/or intensification of impacts due to project activities. While acknowledging the public authorities' role in promoting the health, safety, and security of the public, this Performance Standard addresses the client's responsibility to avoid or minimize the risks and impacts to community health, safety, and security that may arise from project related-activities, with particular attention to vulnerable groups."</p> <p>"The project's direct impacts on priority ecosystem services may result in adverse health and safety risks and impacts to Affected Communities. With respect to this Performance Standard, ecosystem services are limited to provisioning and regulating services as defined in paragraph 2 of Performance Standard 6. For example, land use changes or</p>

	<p>effective options to reduce project-related GHG emissions during the design and operation of the project. These options may include, but are not limited to, alternative project locations, adoption of renewable or low carbon energy sources, sustainable agricultural, forestry and livestock management practices, the reduction of fugitive emissions and the reduction of gas flaring.</p> <p>For projects that are expected to or currently produce more than 25,000 tonnes of CO₂-equivalent annually, the client will quantify direct emissions from the facilities owned or controlled within the physical project boundary, as well as indirect emissions associated with the off-site production of energy used by the project. Quantification of GHG emissions will be conducted by the client annually in accordance with internationally recognized methodologies and good practice.”</p>	<p>the loss of natural buffer areas such as wetlands, mangroves, and upland forests that mitigate the effects of natural hazards such as flooding, landslides, and fire, may result in increased vulnerability and community safety-related risks and impacts. The diminution or degradation of natural resources, such as adverse impacts on the quality, quantity, and availability of freshwater, may result in health-related risks and impacts. Where appropriate and feasible, the client will identify those risks and potential impacts on priority ecosystem services that may be exacerbated by climate change. Adverse impacts should be avoided, and if these impacts are unavoidable, the client will implement mitigation measures in accordance with paragraphs 24 and 25 of Performance Standard 6.</p>
<p>EBRD Performance Requirements</p>	<p>PR3</p> <p>“This Performance Requirement (PR) outlines a project-level approach to climate impacts and greenhouse emissions, resource management and pollution prevention and control. It builds on the mitigation hierarchy, the principle that environmental damage should as a priority be rectified at its source, and the “polluter pays” principle. The project related risks and impacts associated with resource use, and the generation of waste and emissions need to be assessed in the context of project location and local environmental conditions. Appropriate mitigation measures, technologies and practices should be adopted for efficient and effective resource use, pollution prevention and control and avoidance, minimisation and reduction of greenhouse gases (GHG) emissions.”</p> <p>“The client’s environmental and social assessment process will consider alternatives and implement technically and financially feasible and cost-effective options to avoid or minimise project-related GHG emissions during the design</p>	<p>Section III: Scope</p> <p>“EBRD recognises the importance of addressing both the causes and the consequences of climate change in its countries of operations. EBRD will engage, whenever appropriate, in innovative investments and technical assistance to support no/low-carbon investments and climate change mitigation and adaptation opportunities, as well as identify opportunities to avoid, minimise or reduce greenhouse gas emissions in projects. EBRD will require its clients to assess risks caused by climate change to the projects. EBRD will also support its clients in developing climate adaptation measures and climate resilient investments as well as in managing risks caused by climate change.”</p> <p>PR1</p> <p>“... risks caused by climate change to the project shall be considered throughout the assessment process.”</p> <p>PR3</p> <p>“The client will, as part of its environmental and social assessment process, consider the potential cumulative impacts of water</p>



and operation of the project. These options may include, but are not limited to, alternative project locations, techniques or processes, adoption of renewable or low carbon energy sources, sustainable agricultural, forestry and livestock management practices, the reduction of fugitive emissions and the reduction of gas flaring.”

“For projects that either (1) have, or are expected to have, gross emissions in excess of 100,000 tonnes CO₂-equivalent annually, or (2) are expected to result in a net change in emissions, positive or negative, of more than 25,000 tonnes of CO₂-equivalent annually post-investment, the client will quantify these emissions in accordance with EBRD Protocol for Assessment of Greenhouse Gas Emissions. The scope of GHG assessment shall include all direct emissions from the facilities, activities and operations that are part of the project, as well as indirect emissions associated with the production of energy used by the project. Quantification of GHG emissions will be conducted by the client annually and reported to EBRD.”

abstraction upon third party users and local ecosystems. This assessment will also consider the potential effects of climate change. Where adverse risks and impacts are identified, the client will implement appropriate mitigation measures to mitigate such risks and impacts in accordance with the mitigation hierarchy approach and GIP.”

PR4

“The client will identify and assess the potential risks caused by natural hazards, such as earthquakes, droughts, landslides or floods as these relate to the project. This may require the clients to undertake an assessment of the vulnerability of the project to risks caused by the climate change and identify appropriate climate resilience and adaptation measures to be integrated into the project design.”

PR6

“The baseline assessment will consider, but will not be limited to relevant risks to biodiversity and ecosystem services, focussing... impacts relevant to climate change and adaptation.”

“In accordance with GIP, the assessment will consider: (i) the project’s potential impacts on ecosystem services, including those that could be exacerbated by climate change; (ii) the use of, and dependence on, these ecosystem services by potentially affected communities and/or indigenous peoples; and (iii) the project’s dependence on these ecosystem services.”

3.0. Roles and Responsibilities

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

Roles	Responsibilities
Executive Director	<ul style="list-style-type: none"> • Ensure adequate resources are provided for implementation of this Plan. • Ensure the Plan is distributed to all relevant Contractors and subcontractors.
Environmental and Social Manager	<ul style="list-style-type: none"> • 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 associate	<ul style="list-style-type: none"> • Main responsibility for ensuring the Implementation of the Plan and reporting Implementation performance of the Plan to the upper management. As required, review and update the Plan. Collect data from the air quality management practices, developed and implemented actions and performance of actions.
All staff	<ul style="list-style-type: none"> • Participate in trainings required. • Ensure self-competency in terms of implementation of this plan.
Contractors	<ul style="list-style-type: none"> • Responsible for reading, understanding, and implementing this management plan within their areas of work and responsibility. • Communicate the contents of this management plan to their workforce and provide the necessary training. • Ensure that the procedures established in this management plan are complied with by their workers and any subcontractors. • Ensure that any environmental incidents are reported to Eastern Mining, according to procedures.

4.0. Air Quality and GHG Plan

4.1. Potential air emissions

Potential air quality emissions considered within this air quality management plan are categorised as:

- Fugitive dust:
 - Particulate matter generated from mining operations, earthmoving, material transport and handling, and unpaved road traffic, crushing and screening of ore;
- Combustion emissions:
 - Internal combustion engines (heavy and light vehicles, equipment motors, back-up generators); and
- Nuisance odours:
 - Non-health-related gaseous emissions affecting employees or nearby residents.

The project activities will involve use of significant quantities of fuel for operation of plant, equipment and machinery, resulting in greenhouse gas emissions (GHG) during construction and operation phases of the project. These greenhouse gas emissions will be monitored as the project continues. There is no requirement for on-site power generation (using heavy oil or diesel generators) as the site will have access to mains power from the local electricity grid (supplemented by solar power generation at the Veovaca process plant admin building).

During construction earth works associated with surface infrastructure and initial earth movements at Rupice, as well as along the haul route, at the Veovaca plant site and within the TSF area could all lead to the potential emission of fugitive dust.

The Vares Project comprises of the polymetallic underground Rupice Mine and the Vares Processing Plant (VPP) with associated infrastructure. The following infrastructure is associated with the Project:

- Rupice Infrastructure, comprising:
 - Underground workings, including ventilation shafts and primary crusher;
 - Waste Rock Stockpile;
 - Three Run-of-mine (ROM) stockpiles of varying grade;
- Haul Route: 24.5 km long haul route, connecting the Rupice mine to the Vares Processing Plant utilising existing (sealed and unsealed) roads, new planned roads and forest tracks.
- Vares Processing Plant Comprises of:

- Grinding facility with 3 stage crushing;
- Emergency stockpile and crushed ore receiving hopper (enclosed with dust collector);
- Coarse ore day bins with conveying system (dust collector at transition points); and
- Dry-stack Tailings Storage Facility (TSF).

During operations, the potential for dust and fine particulate matter emissions from the mine activity at Rupice is very low as the work will take place below ground. Some dust will be generated from the handling of ore and waste rock from stockpiles to be transported either to VPP or to the backfill plant.

Crushed ore will be transported by haul road to the Vares Processing Plant to the southeast, where it will be stockpiled before being processed.

The erosive action of vehicle traffic on haul roads is considered to be a significant potential source of dust as the mechanical action of wheels on the road surface causes dust lying on the road surface to be thrown up and become entrained in a moving airflow. The deposition of this dust is dependent on the particle size and meteorological conditions. The erosivity of unsealed haul roads depends on the number and size of wheels, vehicle speeds and the moisture content of the surface material.

During closure, the demolition and removal of buildings at Veovaca processing plant could lead to dust emissions, though as earth works will be limited, these are not expected to be significant. Earth works at Rupice may lead to some short-lived dust emissions. As the haul route will not be altered post-closure no additional dust emissions are expected to occur.

Combustion Emission Sources could include emissions from diesel fired back up power generators (Mains power from the nearby electricity grid, supplemented with solar power will be utilised by the project). The use of plant equipment and machinery for mine operations will also result in emissions of nitrogen oxides, particulate matter, sulphur oxides and carbon monoxide.

Nuisance odours during construction and operations could be generated from improperly managed domestic waste (storage and haulage) and domestic wastewater treatment/disposal.

Table 3. below presents a summary of the various types of emissions that could affect air quality during construction and operations, by Project component.

Table 3: Potential Sources of Air Quality Emissions						
Project Component	Releases and Effects	Fugitive Dust	Combustion Gases	Nuisance Odours	Other	Characteristics
Construction						
Earthworks, site	• Dust and dust	X				Fugitive dust generated

clearance and construction	blow from exposed surfaces.					by truck movements and earth moving equipment; short duration.
	<ul style="list-style-type: none"> Vehicle exhaust emissions 		X			NO _x , SO ₂ and CO and diesel particulates; short duration.
Crushing, loading, hauling of aggregates used in construction	<ul style="list-style-type: none"> Mobile crushing plant 	X				Fugitive dust from mobile crushing plant, controlled by fitting plant with water spray to reduce emissions.
	<ul style="list-style-type: none"> Dust generated by loading and vehicle entrainment 	X				Fugitive dust generated from haul trucks on haul roads and construction access roads. Controlled with frequent maintenance of haul road surface and water sprays to dampen the surface in potentially dusty conditions.
	<ul style="list-style-type: none"> Vehicle exhaust emissions 		X			NO _x , SO ₂ , CO, CO ₂ , and particulate emissions
Mining						
Drilling and blasting	<ul style="list-style-type: none"> Dust from drilling 	X				Fugitive dust generated during drilling activities, mitigated by dust filters and contained within the mine.
	<ul style="list-style-type: none"> Dust from blasting 	X				Fugitive dust generated instantaneously during blasting; intermittent and contained within the mine.
	<ul style="list-style-type: none"> Blasting gas 		X			Combustion gases from blasting.
Loading, hauling and related mine traffic	<ul style="list-style-type: none"> Dust generated by loading and vehicle entrainment 	X				Fugitive dust from ore/waste rock may contain low concentrations of metals; only emitted during dry periods; controlled with watering of haul roads and at load out areas
	<ul style="list-style-type: none"> Vehicle exhaust emissions 		X			NO _x , SO ₂ , CO, CO ₂ , and particulate emissions.
Crushing and Ore Preparation						
Crushing Plant	<ul style="list-style-type: none"> Dust 	X				Fugitive dust escaping from crusher; controlled with water sprays and enclosure (dust extraction).
Loading, hauling, and fine ore	<ul style="list-style-type: none"> Dust generated by loading and 	X			X	Fugitive dust from fine ore may contain low concentration of metals;

deposition	vehicle entrainment					only emitted during dry periods; controlled with watering of haul roads, at load out areas and inherent moisture in the heap
	<ul style="list-style-type: none"> Vehicle exhaust emissions 		X			NO _x , SO ₂ , CO, CO ₂ , and particulate emissions.
Support Infrastructure						
Domestic wastewater treatment	<ul style="list-style-type: none"> Nuisance odours 			X		Septic tanks and wastewater treatment plant.
Closure						
Process plant and supporting infrastructure and traffic movements on roads	Dust	X				Dust generated from demolition activities, earthworks. Water spray where necessary.
Closure of Rupice and demolition of surface infrastructure	Dust	X				Dust generated from demolition activities, earthworks. Water spray where necessary.

The most significant source areas considered likely to contribute to dust emissions from the Project during construction have been identified as fugitive dust emissions from earthmoving activities taking place including the construction of haul roads.

Dust emission rates from construction and closure activities have not been separately calculated, because they would be short term, temporary and the dust emissions will follow the same dispersion patterns as the dust from operational activities.

The most significant sources of air emissions during operations are considered to be:

- Dust emissions from material haulage, tipping and crushing activities; and
- Vehicle exhaust gases (mobile and static plant fuelled by diesel), with emissions including NO_x, particulates (PM10) and CO₂.

4.2. Mitigation Measures for Air Quality Impacts

- Fugitive Dust Mitigation Measures

To decrease potential impacts to air quality to the extent practical, substantial fugitive dust controls have been incorporated into the engineering design, which include:

- Enclosure of primary and secondary crusher with dust extraction and filtration devices;
- Use of water sprays at material stockpile/hopper loading points and other identified dust emission points, updated as required by the AQMP

- Dust raised from unpaved road surfaces during haulage has been identified as the most significant emission source. In order to remove the risk of unacceptable impact, it will be necessary to provide and maintain sections of hard surfaced road near residential locations and near to particularly sensitive habitats. These will be identified in the detailed design of the haul road.

Additional dust control measures will be systematically utilised by the Project during construction and operations, as set out in the AQMP; and include:

- Road control programmes – Appropriate dust suppression techniques will be undertaken, including spraying roads/vegetation with water and/or application of stabilising agents such as salt (winter), gravel, or environmentally inert chemicals, as appropriate. In addition, adequate equipment and personnel will be supplied to maintain road surfaces to control dust on the haul and access roads;
- Speed and off-road restrictions – Establishing and enforcing Project safety rules, including the posting and enforcement of speed limits on the haul and access roads and restricting off-road travel to the maximum practical extent will limit the potential for additional fugitive dust emissions, as well as public safety hazards. Those employees whose jobs include driving, as well as haulage contractors, will be advised of the safety rules and that driving off established roadways is not allowed. Instruction on driving safety and observation of speed limits will be included in the new employee orientation and annual refresher training and in task training for specific job assignment. This aspect is developed further in the Traffic Management Plan.

- Combustion Mitigation Measures

Combustion emissions have been reduced for the Project in the following ways:

- Use of modern, energy efficient electrical equipment and mobile plant with fuel-efficient engines;
- Use of equipment exhaust controls. Exhaust controls on mobile equipment must be properly installed, positioned, maintained, and replaced as needed throughout the useful life of the equipment. Procurement of updated equipment with emissions controls and proper operation, care, and maintenance of the equipment will reduce combustion emissions to acceptable levels for vehicles and generators, as well as allowing the equipment to run more efficiently and increasing its operational lifespan.

- Nuisance Odour Mitigation Measures

To reduce impacts from nuisance odours sewage treatment and waste storage facilities will be operated properly and monitored for operational performance, including nuisance odours.

- Project facilities will incorporate appropriate waste storage and handling procedures; and
- Sewage treatment facilities will be operated properly and monitored for operational performance, including nuisance odours.

4.3. Residual Impacts to Air Quality

Without appropriate mitigation, nuisance dust and fine particulates could have a moderate adverse impact upon on employees and sensitive receptors in the immediate vicinity of the site (humans residing close to the project haul roads and adjacent habitats). The AQMP will therefore be implemented to minimise nuisance dust emissions and control fine particulates. With appropriate mitigation measures it is considered that the impact on flora, employees and human receptors will be of negligible to minor significance in both the short term and the long term.

With appropriate management of sewage and waste management facilities, nuisance odour-related impacts are considered negligible and not significant, as little putrescible waste will be produced. With appropriate mitigation measures applied, the residual impact is considered negligible in both the short term and the long term for all sensitive receptors.

Table 4. presents a summary of the anticipated air quality impacts, relevant operational phase and planned mitigation measures.

Table 4: Summary of Air Quality Impacts

Impact	Mining Stage	Impact before mitigation	Key Mitigation	Residual Impacts
Fugitive Dust and PM10 emissions from earth works, loading, haulage, crushing	Construction	Minor	<ul style="list-style-type: none"> Enforce speed limits for heavy equipment and general traffic on unpaved roads. Restrict off-road travel unless absolutely necessary. Limit number of trips with efficient loading procedures for material transport. Apply stabilizing agents on high dust areas. Top-wet truckloads of dusty material. Spray water on unpaved roads and traffic areas. Maintain gravel/laterite cover on unpaved roads and traffic areas. Install dust suppression / control equipment at loading/unloading, storage, and material transfer points. Crusher contained within a purpose designed building. 	Negligible
	Operation	Minor/Moderate	<ul style="list-style-type: none"> All of the above mitigation measures. Use employee personal protective equipment where required and occupational medical monitoring. Provide sections of hard surfaced road near residential locations and along the section of road within/near to the mountain hay meadow and hydrophilous tall herbaceous vegetation habitats. 	Negligible
	Closure	Minor	<ul style="list-style-type: none"> All of the above mitigation measures. 	Negligible
Combustion emissions from Engine sources (mobile plant and other vehicles) Emissions	Construction	Minor	<ul style="list-style-type: none"> Enforce speed limits for heavy equipment and general traffic on unpaved roads. Train operators and drivers about maximum idling times. Install appropriate emissions control equipment on vehicles. Perform regular maintenance and inspection of vehicles and mobile equipment, including their emissions control systems. 	Negligible
	Operation			
	Closure			
Nuisance Odours	Operations	Minor	<ul style="list-style-type: none"> Practice appropriate waste reduction and recycling procedures to minimise waste. Incorporate appropriate waste handling and storage procedures, as per the Waste Management Plan. Operate sewage treatment facilities properly and monitor operational performance (including odours). 	Negligible

4.4. Mitigation Measures of GHG and residual impacts

GHG emissions have already been reduced through the design of the Project as follows:

- minimizing the land clearance for project facilities;
- minimise tree felling (only trees needing to be removed for safety reasons above the haul road will be felled);
- providing improved building fabrics for buildings to minimize heat losses as well as reducing noise impacts;
- the use of modern, energy efficient electrical equipment and mobile plant with fuel-efficient engines.
- A 32.4kWp roof-mounted solar PV array has been included at the VPP admin building. This is expected to save at least 20.6tCO₂e per year

GHG mitigation opportunities are also being explored further as the project design is advanced and operational activities are further developed. These include:

- Although haulage works are likely to be undertaken by contractors, consideration will be given to the choice of vehicles used for both the mine fleet and the haulage fleet. Where possible fuel efficiency will be a factor in the selection of vehicles as this will not only reduce emissions but also reduce operating costs. There is currently considered to be limited potential for the use of biodiesel to help reduce emissions, however the Project will continue to monitor potential options;
- In addition to the efficiency of the fleet itself, opportunities will be sought for improving the use of the vehicles. Scheduling of excavation and haulage activities to optimize activities and avoid double handling, where this is operationally practical. As the mine logistics and scheduling are progressed, consideration will be given to the optimisation of vehicle and equipment movements to improve efficiency and reduce overall CO₂ emissions; and
- The upgrading of energy-intensive machinery over time will be used to improve efficiency and reduce CO₂ emissions compared to plant that has been removed. Further energy efficiency opportunities will also be investigated.

The Project will continue to seek to reduce its GHG emissions throughout its lifecycle. Reporting, in compliance with IFC requirements, which will be undertaken prior to commencement of development and annually for the duration of operations, will allow targeted efforts to improve efficiency and reduce emissions.

Table 5 presents a summary of the anticipated GHG impacts and planned mitigation measures. It is acknowledged that whilst the main impact associated with GHG emissions is their contribution to climate change, the Vares Project is one of a myriad of human sources impacting the emissions of GHGs and contributing to climate change, and projected changes in local, regional, and global climate cannot be attributed in isolation to the proposed Project.

Table 5: Summary of Mitigation and Residual Impacts

Impact	Mining Stage	Impact before mitigation	Key Mitigations	Residual Impacts
Greenhouse Gas emissions from onsite power generation, onsite stationary and mobile plant, heating plant and explosives emissions, tree felling and vegetation clearance, and use of imported grid electricity.	All	<p>Significant Adverse (in absolute terms – 557,000tCO₂e)</p> <p>Neutral (in relative terms compared to global average emissions for gold and silver recovery)</p>	<p>Energy efficiency measures incorporated into engineering design.</p> <p>Require use of modern, energy-efficient mobile plant.</p> <p>Implement logistics management of haulage and excavation activities to minimise idling and double-handling.</p> <p>Perform regular maintenance on mobile plant.</p> <p>Installation of 32.4kWp solar PV array on administration building</p> <p>Seek additional opportunities for GHG emissions reduction throughout Project lifecycle, including consideration of additional renewable energy opportunities.</p> <p>During detailed design, energy-intensive uses such as the crusher plant will be assessed for energy efficiency opportunities.</p>	<p>Significant Adverse (in absolute terms – less than 557,000tCO₂e)</p> <p>Neutral (in relative terms compared to global average emissions for gold and silver recovery)</p>

4.5. Projected Physical Risk of Climate Change Impacts on Project

To assess the physical risks that Climate Change poses to the project the following matrix has been developed to identify what those risks are, how serious a threat they pose and any potential mitigation or adaptation that can be used to address the risk.

Table 6: Projected Physical Risk of Climate Change Impacts on Project

Climatic Factor	General Impact	Component/sub structure impacted	Vulnerability	Adaptation
Soil Drying	Increase will affect water tables and could potentially adversely affect foundation structures.	Increased risk of basement heave or subsidence, water ingress, consequential damage to finishes and stored items. Ground shrinkage can lead to failure of electrical, gas and water pipes, foundations and sub-structures.	<p>Low</p> <p>The finishes are likely to be of low importance in an industrial setting but alertness to possible physical damage should be high.</p>	Regular monitoring and maintenance of site infrastructure will be undertaken to identify early signs of failings and take corrective action.
Temperature	Maximum and minimum changes will affect heating, cooling and air conditioning costs. Frequency of cycling through	Existing air conditioning and ventilation loads may increase. Overheating of mechanical and electrical equipment effecting lifespan, reliability and potential health and safety	<p>Medium</p> <p>Average monthly temperatures in Bosnia and Herzegovina are projected to increase by</p>	Additional air conditioning will be considered in areas where increased temperatures may adversely affect the workforce or vulnerable machinery and equipment. Adequate provision will be made to ensure explosive stores and fuel stores are

Table 6: Projected Physical Risk of Climate Change Impacts on Project

Climatic Factor	General Impact	Component/sub structure impacted	Vulnerability	Adaptation
	freezing point will affect durability. Daily maximum and minimum temperature will affect thermal air movement.	issues. Plastic materials will have a reduced lifespan. Structure/cladding/roofing membranes, sealants, pavements and roads have increased risk of cracking. Reduced capacity of overheated power lines (there is no external connection to the power transmission grid, but overheating may be an issue even on the local onsite connections). Building overheating (due to increased fabric efficiency and incorrect implementation). Decreased labour productivity.	between 1-2°C over the next 20yrs based on current levels of warming (using the RCP8.5 scenario, which is looking increasing realistic). In summer in particular, temperatures could increase by as much as 3°C which would be significant. Drier environment and potential heat waves could mean higher risk of fires as well as dehydration and heatstroke.	maintained at safe operating temperatures. Ensure proactive monitoring and maintenance procedures in place for building materials and site infrastructure. Provision of potable and non-potable water will be increased as required to ensure workers and processes are sufficiently hydrated. Monitoring of fire risk will be routinely undertaken and active steps to remove possible ignition sources and fuel sources, particularly in dry weather will be undertaken.
Relative Humidity	Increase will affect condensation and associated damage or mould growth.	Timber framed construction may be vulnerable. Internal walls, finishes and stored items.	Low	Monitoring will be undertaken for any mould growth, which has potential to cause health and safety issue. High levels of humidity can make heat stroke more likely, so provision will be made to ensure workforce safety.
Precipitation	Increase and decrease will affect water tables; durability and risk of water ingress will be affected by combination of precipitation increase and gales.	Increased risk of roof failure, increased chances of flooding. Structure/ cladding/ roofing membranes and sealants have increased risk of cracking due to different moisture movements. Potential damage to foundations and basements. Delays in construction and increased costs. Increased risk of subsistence.	Low The median rainfall levels are projected to fall although the intensity of individual events may increase. Higher intensity events may lead to more risk of flooding and potentially landslides and mud slides.	The VPP site elevation creates a ground surface fall away from the nearby Tisovici settlements. Stormwater and runoff is collected by onsite and perimeter drains which outflow to the Mala river. The potential for an intense thunderstorm event to overwhelm the site drainage is low as the drainage has been designed for a 1 in 100 year recurrence interval. Further information can be found in the Hydrology and Hydrogeology chapter at Section 5.7.3.1)

Table 6: Projected Physical Risk of Climate Change Impacts on Project

Climatic Factor	General Impact	Component/sub structure impacted	Vulnerability	Adaptation
				<p>At Rupice, during construction, sedimented run-off from site clearance and earthworks will drain to settlement ponds with decant to the Vruci Potok (Hot Stream) valley. Surface infrastructure and groundworks are all located on the western side of the Kiprovac ridge, below the ridge line and therefore no expected overland flow routes are present connecting to the Borovicki river. The Vruci Potok is currently subject to frequent heavy sedimentation and turbidity from non-project related forestry activities. One of the first scheduled construction activities will be the excavation and lining of the non-contact water settlement pond which is located at the foot of the site and within a natural drainage line that collects from the site footprint. The settlement pond is designed to retain two days residence water collected from the site and has sufficient capacity to hold a design stormwater flow.</p> <p>Where appropriate, the use of flood-proof barriers in doorways will be considered. Any vulnerable electrical infrastructure will be elevated to a safe height to prevent water ingress.</p> <p>The stability of banks and hillsides in working areas of the mine as well as the processing areas and access tracks will be regularly assessed to confirm it is safe to operate near them. Similar consideration will be given to the haul route to ensure it is not at risk of flooding or of landslides/mudslides.</p>

Table 6: Projected Physical Risk of Climate Change Impacts on Project

Climatic Factor	General Impact	Component/sub structure impacted	Vulnerability	Adaptation
				The monitoring regime will be stepped up during periods of prolonged or intense rainfall.
Gales	Increase will affect need for weather tightness, risk of water ingress, effectiveness of air conditioning, energy use, risk of roof failures.	Increased risk of damage to roofing and higher risk of failure. Increased risk of materials and dust blowing around. Risk of damage to property or life either through direct wind action or through trees being blown over. Delays to work.	Low The baseline assessment indicates that average wind speeds and even maximum gusts are not expected to be a significant issue in this location.	Wind speeds will be monitored for climate-related increases. If observed appropriate action should be taken.
Radiation	Increase may affect need for solar glare control.	Window specification and glare control requirement.	Low Glare is unlikely to be an important consideration in this situation.	If this is found to be a problem, it would be relatively easy to retrofit tinted coverings to glass or issue sunglasses.
Cloud	Increase/decrease in seasonal lighting needs.	Changes in lighting systems and glare control requirement.	Low Most operations will either be underground or indoors. Either way, lighting systems will be available to ensure safe operation can continue.	If this effect is observed, then lighting may need to be improved either by installing brighter bulbs or more lights, but this is not expected to be a significant risk to the project.
Snow fall	According to the CCKP, winter precipitation rates are not predicted to vary significantly over the LoM, however the temperatures are expected to increase consistently by 1-2oC so this may increase the risk of flooding.		Medium Winter precipitation is not expected to vary significantly but the warmer temperatures may mean this is more likely to fall as rain rather than snow. If it does fall as snow and then temperatures rise sharply, there may be a greater chance of flooding from snow melt.	Active measures to minimise the risk of flooding, particularly during winter will be implemented where necessary. Flood-proof barriers in doorways will be installed if the risk of flooding increases. Any vulnerable electrical infrastructure will be elevated to a safe height to prevent water ingress.

5.0. Monitoring and reporting

Monitoring of air quality and GHG will be undertaken to determine whether construction or operational activities are causing adverse impacts upon the surrounding environment.

Monitoring points are defined in Table 7. Monitoring and reporting are defined in Table 8.

Location	Monitoring Location	Latitude/Longitude	Approximate Number of Dwellings	Distance	Source
Semizova Ponikva	AQN8/AQ1	44°10'21.67"N 18°17'21.27"E	2	60-170m	Haul Road
Vareš	AQ3/AQ2	44°16'15.84"N 18°32'63.42"E	>100	280-1000m	Haul Road
South of Vareš	AQN7/AQ3	44°14'42.46"N 18°32'18.09"E	20-30	80-300m	Haul Road
Bijelo Borje - Tisovci	N/A / AQ4	44° 8'17.08"N 18°20'3.87"E	4	7-100m	Haul Road
Tisovci	AQN4 (AQ5) & AQN5 (AQ6)	44°14'10.48"N 18°34'77.56"E	10	60-90m	Haul Road & Processing Plant
		44°14'20.02"N 18°34'81.46"E		60-120m	
		44°14'27.80"N 18°34'81.51"E		60-200m	
Przici	AQN3 (AQ7)	44°14'74.56"N 18°35'62.13"E	10-20	400-800m	Processing Plant

Beside those locations, additional temporary monitoring locations (on each active construction site) will be included in monitoring on weekly basis.

Air quality, Monitoring and Reporting programme and procedures		
Monitoring approach	Baseline	A programme of ambient air sampling has data available from 2020-2021 in order to establish baseline conditions at key locations within the Project licence area
Level 2 Management Plan	The Plan provides the details of mitigation measures to control emissions of dust, particulates and combustion gases, associated with mobile plant	

Table 8: Air Quality Monitoring and Reporting

Air quality, Monitoring and Reporting programme and procedures			
Level 3 Standard Operating Procedures	<p>The Plan will be underpinned by five Standard Operating Procedures that will provide specific guidance on sampling locations and procedures during the construction, operational and closure phases. The level 3 procedures will include the following:</p> <ul style="list-style-type: none"> • Visual inspection – routine visual monitoring to identify sources of dust emission, these inspection position will be determined to demonstrate coverage of identified sources of dust, including haul roads, crushing plant and load out points. • Meteorological stations – location, download procedures, analysis of results and persons responsible for data collection and dissemination. The maintenance requirements for the met stations will also be identified together with non-conformance procedures. • Location, collection, replacement and analysis of SO₂ and NO₂ samples, to include the procedures for the collection of active tubes (sample number, date, time and location reference), procedure to ensure that tubes are not contaminated between the sampling location and site offices, and procedures for shipment to accredited laboratory. Chain of custody documentation. • Location, collection and replacement of DustScan sticky pads, to follow similar procedures as those for SO₂ and NO₂ sampling. • Environmental sampling and maintenance procedures for periodic TSP, PM10, and PM2.5 monitoring. • The location of the monitoring instruments will be determined in a revision of the Level 2 AQMP. Dependent on suitable positions, this SOP will therefore be informed by an audit of the site at the onset of the operational phase, when the final details of the plan will be designed. The SOP will define the monitoring requirements and periods for the use of the equipment, which will be directed towards areas of the operation where the effectiveness of mitigation measures can be determined, thus providing feedback to the aims and objectives of the AQMP. 		
Monitoring strategy			
Visual inspection	Environmental staff	Routine observations developed against a graded system for inspecting and determining whether dust suppression techniques are sufficient or require further action.	<ul style="list-style-type: none"> • Organize trainings of environmental staff, shift supervisors and mine management to develop a consistent approach to auditing dust emissions before start of construction works. • Organize trainings for contractors and subcontractors before start of construction works. • Ensure that any environmental incidents are reported to Eastern Mining, according to procedures. • A record to be made of any exceptional events that trigger additional dust management should be kept together with approach to mitigation.
NO_x and SO_x	Gradko tubes (or equipment with similar specifications for continuous monitoring)	Acrylic tubes designed for passive sampling of airborne gases. The tube contains an adsorbent material which can then be analysed by UV/Visible Spectrophotometry with reference to a UKAS (United Kingdom Accreditation Service) calibration curve,	Recommended exposure length typically in the order of 4 weeks, after which time they are removed from their sampling location and returned to the manufacturer's accredited laboratory for analysis. Continuous use, reviewed annually.

Table 8: Air Quality Monitoring and Reporting

Air quality, Monitoring and Reporting programme and procedures			
		appropriate to this methodology.	
Dust	Using Bergerhoff dust collector	<p>Bergerhoff's device for collecting total sediment consists of a container for collecting sample and a stand with a protective wire mesh, which serves to accommodate the container and to protect against birds. The vessel stands in a stand for a month and sediment and precipitation are collected in it. A plastic/glass container is used as a container for collecting total sediment and precipitation. Due to fact that in winter at temperatures below 0°C, and also during manipulation, it can happen that the glass container breaks, a plastic container (preferably made of polyethylene) of the same shape and dimensions is used more often. As the efficiency of capturing the total sediment depends on the diameter of the inlet and the shape of vessel, it is important that the same vessels are used within one measuring network.</p>	<p>The sample collection container with the mark of the measuring point and the date of installation is placed in a rack, unfolded and left exposed for a period of 30 days, which means that 12 samples are collected at each measuring point in a year. At the end of the sampling period, the sample containers are collected, tightly closed and replaced with new, clean ones to collect next sample. In an upright position, the vessels are carefully delivered to the laboratory to determine the amount of total sediment and to determine the chemical composition of the total sediment.</p>
Particulates	Mobile Sampling	<p>Mobile sampling equipment designed to measure particulates using low volume sampling pumps, which can also recover SO₂, NO_x, CO, O₃, H₂S.</p>	<p>Periodic deployment of a mobile air quality monitoring station Quarterly, subject to review of results.</p>
Data on GHG gases	Data collecting	<p>Collect data such as grid power used, generator use, diesel consumption etc.</p>	<p>For annual reporting on GHG emissions.</p>

6.0. Training

A number of training programs will be provided for the project personnel working with air quality, as well as the environmental team, and relevant contractors and subcontractors. This will include training in data collection and reporting as well as implementing practical measures.

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.

Incident reporting will be managed in accordance with the ESMS and SEP. Incidents will be logged, assessed and reported to the ESG Committee. All incidents will be publicly disclosed, in accordance with the Stakeholder Engagement Plan and Emergency Preparedness and Response Procedure.

Annual ESG reporting will be undertaken by Adriatic in line with the GRI requirements and will be informed by an annual materiality assessment. This will include a section dedicated to ESG performance in the Annual Report to shareholders and, in line with the evolving scale of the Company's social and environmental impacts and stakeholder expectations, a dedicated Sustainability Report .

Depending on the monitoring results, Air quality and GHG Plan will be reviewed and updated when necessary.