Non-Technical Summary
Environmental and Social Impact Assessment
Krumovgrad Gold Project, Bulgaria

Submitted to

Dundee Precious Metals Krumovgrad EAD

Submitted By

AMEC Earth & Environmental UK Ltd.

REPORT ISSUE FORM

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1.0 BACKGROUND

Dundee Precious Metals (DPM) has negotiated an amended financial package with a consortium of banks for which the European Bank for Reconstruction and Development (EBRD) acts as environmental agent. According to the EBRD's Environmental and Social Policy (2008) and its associated Performance Requirements (PRs), a project of this type and scale requires a full Environmental and Social Impact Assessment (ESIA). The Project was subject to a local national environmental impact assessment (EIA) to Bulgarian standards in 2010 and an environmental permit No. 18-8, 11/2011 was issued. Following an independent review of the local EIA reports, the EBRD required preparation of a number of supplementary environmental and social studies and documents to fill the gaps necessary to meet the EBRD PRs and international good practice. In addition to the EBRD PRs, some of the consortium banks require adherence to the Equator Principles and therefore the Project also references the IFC's Performance Standards on Environmental and Social Sustainability (2012). The package of supplementary environmental and social documents as well as the local EIA reports together form the Project ESIA. This document is a non-technical summary of the Project ESIA. The following table sets out the process of local environmental permitting followed to date for the Project including various milestones.

Date	Description
24th November, 2011	Issued Permit 18-8 by the Ministry of Environment and Waters (MoEW) based on the EIA (2010) submission.
5th July, 2012	Issued Permit №464/25.06.2012 by the MoEW to allow exceptions to the prohibitions envisaged in Art 38, Para 1, Item 1, 2 and 6 regarding Art 48, Para 2, Item 1 and 5 of the *Biodiversity Act*, namely catching, moving, transporting to another suitable area, temporary breeding for treatment and rehabilitation purposes of species of Iberian tortoise (Testudo graeca) and Hermann's tortoise (Testudo hermanni). This is the start of relocating/shifting tortoises from the Project territory.
11th March, 2013	Issued Water consumption Permit No. 31530328/04.03.2013 for abstraction of groundwater resources through construction of new water abstraction facility – abstraction well situated in the banks of
23rd July, 2013	Received letter from Ministry of Economy and Energy for coordination of a Life of Mine Plan for Mining and Primary Processing of Gold Ores from Khan Krum Deposit, Ada Tepe prospect
6th August, 2013	Received letter from Ministry of Economy and Energy for coordination of a Mine Closure Plan for mine decommissioning and rehabilitation of disturbed lands for the Ada Tepe prospect, Khan Krum deposit
1st October, 2013	Received letter from Ministry of Economy and Energy for coordination of a Mine Waste Management Plan concerning wastes, generated by the mining and primary processing of ore bearing ores from Khan Krum Deposit, Ada Tepe prospect
In the period November 2013 – January 2014	DPM Krumovgrad completed construction of underground part of water abstraction facility and drainage branch
27th January, 2014	The Bulgarian environmental authorities approved the Environmental Monitoring Plan.

Date	Description
2012 - 2014	Terms of Reference (ToR) for Detailed Development Plan (DDP) of mine site, ToR for DDP of Discharge pipeline, ToR for DDP of abstraction well and ToR for DDP of access road were coordinated with Regional Inspectorate for Environment and Waters – Haskovo, Ministry of Culture.
7th July 2014	ToR for DDP of mine site approved by Krumovgrad Municipality Council

As a next step the Project will require approval of its Detailed Development Plan (DDP).

In addition to the Environmental Impact Assessment (2010) the following documentation was developed:

- Environmental Monitoring Plan
- Assessment on the Compatibility of Conservation Objectives[1]
- Mine Waste Management Plan.

As part of the additional information requested, a Supplementary Lender's Information Package (SLIP) was developed that consists of:

- Non-Technical Summary Environmental and Social Impact Assessment of the Krumovgrad Gold Project (This report)
- Social Impact Assessment Krumovgrad Gold Project
- Stakeholder Engagement Plan Krumovgrad Gold Project
- Social Impact Assessment Scoping Study Krumovgrad Gold Project
- Visual Impact Assessment Krumovgrad Gold Project
- Ecosystem Services Report Krumovgrad Gold Project
- Liner Requirement Evaluation Krumovgrad Gold Project
- Greenhouse Gases Inventory Krumovgrad Gold Project
- Air Quality and Dust Management Plan Krumovgrad Gold Project
- Framework Traffic Management Plan Krumovgrad Gold Project
- Emergency Response and Preparedness Plan Krumovgrad Gold Project
- Hazardous Materials Management Plan Krumovgrad Gold Project
- Community Health, Safety and Security Management Plan Krumovgrad Gold Project
- Biodiversity Action Plan Krumovgrad Gold Project
- Environmental and Social Action Plan.

[1] Assessment on the Compatibility of Conservation Objectives of the Protected Zone Eastern Rhodope and Protected Zone Krumovitsa with the Investment Proposal "Extraction and Processing of Gold-Bearing Ore from the Krumovgrad Exploration Area", Denkstatt Bulgaria Ltd, December 2010

All the information above can be accessed through the following:

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DPM website:

http://www.dundeeprecious.com/English/sustainability/relevant-documents/krumovgrad/additionaldisclosuredocuments

EBRD:

Website: http://www.ebrd.com/esia.html

Office: EBRD Regional Office
17 Moskovska Street
Sofia

Furthermore, stakeholders and the Public can contact DPMK with any questions or comments.

2.0 INTRODUCTION

2.1 Regulatory background

DPMK (or the Company) intends to construct and operate a gold mine and gold ore processing facility near the town of Krumovgrad in Southern Bulgaria. As part of the requirements for permitting of this Project under Bulgarian Law, DPMK is required to follow the process of environmental and social impact assessment as laid down in the Environment Protection Act and detailed in Bulgaria's "EIA" Regulations. Further, the Project is required to meet the EBRD's Performance Requirements of 2008 (PRs) and the International Finance Corporation's Performance Standards (PS), covering environmental and social issues and impacts. The Project has been categorised as A by the EBRD and is therefore required to undergo a full participatory Environmental and Social Impact Assessment in line with the Performance Requirements. As other lenders may potentially be involved, the ESIA is also required to meet the IFC's Performance Standards, the benchmark for these lenders. Both the PRs and PSs are well aligned.

Environmental and Social impact assessment under the above requirements involves clear definition of the following:

- Description of the Project including alternative options
- Characterisation of the Project's setting in regard to environmental and socio-economic conditions
- Assessment of environmental and social impacts that could potentially arise during construction, operation and closure of the Project by virtue of the nature of the work
- Definition of mitigation measures that are planned to address these potential impacts and forecast of the impacts remaining following mitigation
- Presentation of environmental and social management plans that ensure predicted outcomes are achieved or bettered.

This Non-Technical Summary presents in non-technical language the key findings of the Bulgarian "EIA" report as well as the additional work carried out to satisfy the PRs and the PSs. This document is available in Bulgarian and English.

2.2 Overview of the Environmental and Social Setting

The Krumovgrad Gold Project mining licence area is located in the East Rhodope, approximately 320 km (by road) southeast of Sofia, in the Kardzhali District immediately south of the regional township of Krumovgrad (25° 39' 15"E and 41° 26' 15"N). Krumovgrad is located approximately 12.5 km (direct line) north of the border with Greece.

The Project has a rural setting, is located 3 km south of Krumovgrad town and its elongate footprint trends in a north south direction. The deposit area comprises of hilly topography abutting a major regional river system. Infrastructure in the area is good, with paved roads,

power and water resources available within close proximity to the Project. Secondary roads are unsurfaced but generally accessible year round with four-wheel drive vehicles.

The average annual precipitation is 703.5 mm. The bulk of this falls in Autumn and Winter, occasionally as snow in the coldest months. The highest rainfall occurs in December (96.9 mm average) and the lowest in August (24.1 mm). Estimated 1:100 year rainfall events are 117.3 mm for 24 hours duration, and 184.1 mm for 72 hours. Probable Maximum Precipitation ("PMP") estimates are up to 383.4 mm for 24 hours and 605.4 mm for 72 hours. Average annual evaporation is 1050.8 mm, similar to but higher than annual rainfall in magnitude, but opposite in a seasonal sense.

Small villages are dispersed widely throughout the licence area with their inhabitants involved in subsistence farming, particularly livestock and the growing of tobacco and vegetables on the poorly developed soils characteristic of the Region. Some of the hamlet dwellings have seasonal occupancy only. The other main land category within the licence area is State controlled by the National Forestry Agency.

The population of Bulgaria is largely Eastern Orthodox Christian (85%) and a Turkish Muslim minority predominantly residing in the southeast of the country, including the licence area.

Figure 1: Location Plan of the Krumovgrad Gold Project Area

3.0 PROJECT DESCRIPTION

3.1 Overview

The Krumovgrad Project is a proposed open pit gold mine located in Southern Bulgaria (Figure 1) designed to extract 850,000 tonnes of gold ore per year over an 8 year life. The ore will be processed using physical separation techniques to produce a gold ore concentrate that will be transported off-site for further treatment and refinement in a remote third party facility already permitted for that purpose. A suitable facility has not been identified at this stage. Waste rock and mineral process wastes will be deposited on-site in an Integrated Mine Waste Facility designed to minimise footprint and maximise stability and acceptability after closure as a permanent landscape feature.

The process facilities and mine will be developed, constructed, and operated by DPMK, a wholly owned subsidiary of Dundee Precious Metals. The size of the Project footprint (the area it physically will occupy) has been minimised through several stages of design and re-design in order to limit the total operational area, including a perimeter buffer zone. The facilities of the project will occupy an area of 85 ha, with a further 49 ha being a buffer zone. The buffer zone will not be disturbed and the existing vegetation will act as natural protection barrier. The total footprint covers approximately 134 ha of State-owned forestry land. The initial design envisaged a footprint of 200 ha.

Site clearance will only start once DPMK has acquired the land and the following permits/ resolutions are obtained;

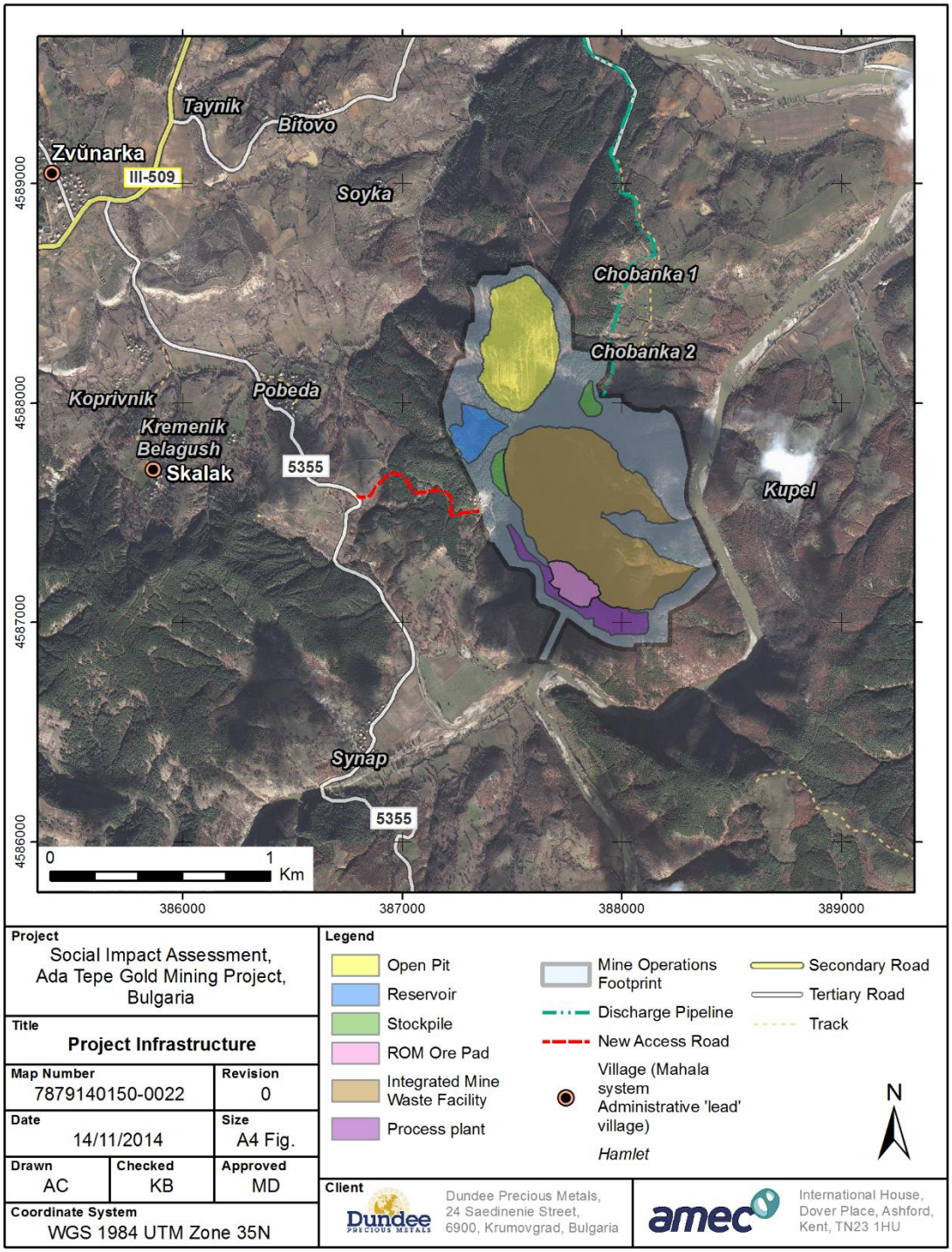
- Preliminary clearance Resolution
- Permission for change of the purpose of the land
- Final Resolution for change of the purpose of the land and signed contract for purchasing of the land
- Decision for approval of the detailed development of the mine site;
- Permit for tree cutting from Local Forestry Department – Krumovgrad.

3.2 Development and Operations

The timeframe for implementing the Project, once all necessary permitting is in place from start through to practical completion of the process plant in readiness for ore commissioning is estimated at 125 weeks (approximately 2.5 years).

Over the 8 year life of mine, 686,000 oz. of gold will be produced within a mineral concentrate. The processing plant is planned to treat up to 0.85 Million tonnes per year (Mtpa) of ore over the 8 year mine life. The overall site plan is presented in Figure 2.

Figure 2: Overall Site Plan



The construction phase is due to be completed over a 24 month period. This phase includes such key aspects as establishing site access and internal roads, clearing operational areas of vegetation and soils (soils being placed in storage berms), constructing the process plant and offices as well as Project infrastructure, including water

management structures. The pit area will be cleared of overburden (not including recovery of gold-bearing ore) and waste management facilities established. Engineered surfaces that are established as permanent features will be re-soiled and revegetated in line with adopting a progressive rehabilitation approach.

The operation is planned to use conventional open pit mining methods to mine ore and waste rock. The mining equipment proposed for the mining operation includes a 3.7 m^3 back hoe excavator and off-highway haul trucks with a payload capacity of 40 tonnes. Provision has been made for drilling and blasting from the initial benches. The pit will be worked to a maximum depth ranging from120 m in the east and 40 m in the west. The assumed bench height is 5 m based on considerations of mining safety, technical specifications of production and drilling equipment.

The open pit will operate two daytime shifts each day to minimise the noise impacts on the local communities.

The process selected as a result of a testwork program comprises crushing and milling of the mined ore followed by froth flotation to produce a gold and silver bearing concentrate. The process plant will operate 24 hours per day, 7 days per week, except for ore crushing which will operate for up to 12 hours per day to avoid night-time noise intrusion.

The project will employ approximately 300 people during the construction period, and 230 people during the operational phase. Approximately 50 people will be retained in the closure and rehabilitation period.

The process plant will be located on the side of the Ada Tepe hill, adjacent to the proposed Integrated Mine Waste Facility (“IMWF”) and approximately 1 km south of the open pit. The milling and flotation areas will be in a building which also incorporates maintenance facilities for the plant, as well as warehousing, plant offices and change rooms. The mining fleet and other company vehicle maintenance will be carried out in a separate building located about 600 m north of the process plant.

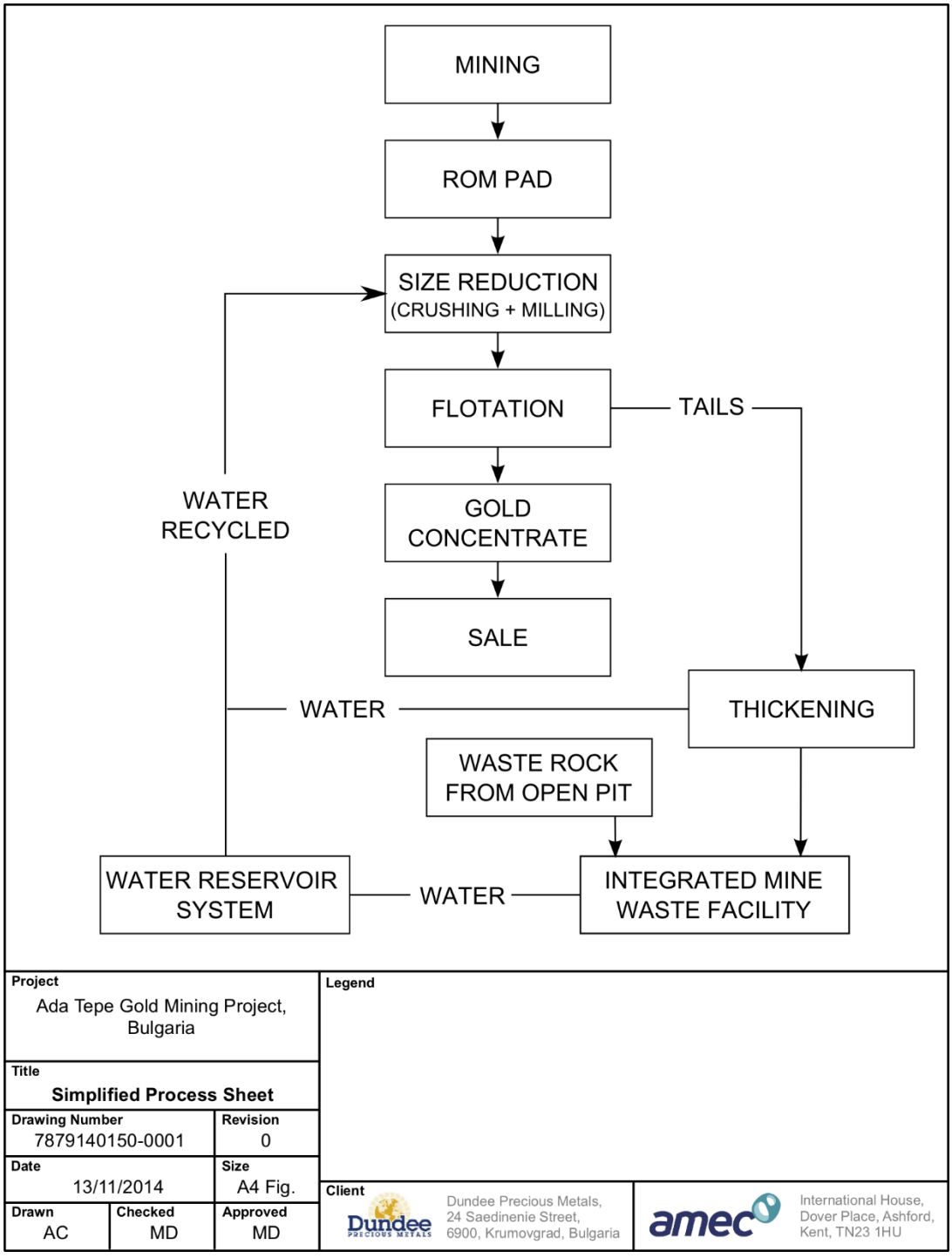
Process plant tailings (mineral residue in slurry form from the concentration process) will be thickened to a paste and will be disposed of in the IMWF, along with waste rock from the open pit mine.

3.3 Process Design

3.3.1 General Design Basis

The complete plant flowsheet is illustrated in Figure 3. This reflects the overall facilities, the most important ones of which are described below. It should be noted that the process involves physical separation techniques. Use of aggressive and highly toxic chemicals and high temperatures and pressures is not required.

Figure 3: Overall Plant Flowsheet



3.3.2 Crushing

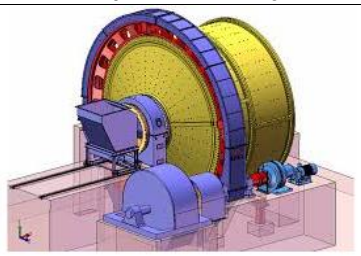
Ore from the open pit mine will be transported by haul truck to a run-of-mine ore pad. This stockpile allows ore to be drawn at a steady rate into the process plant by a front-end

loader. The ore is then discharged into a jaw crusher to produce a crushed product that can be fed onto a conveyor belt to transfer the product to the Coarse Ore Silo for storage prior to the grinding circuit.

Name of the process	Schematic picture of facility	Processing explanation
Excavation and truck loading		First step after blasting – transporting of the ore
Crushing ore in jaw crusher		Crushing ore and preparing for milling process

3.3.3 Grinding Circuit

Ore will be withdrawn from the silo and fed onto the grinding circuit feed conveyor. The grinding circuits comprise of a single stage open circuit grinding mill that produces a powder that is mixed with water to create a slurry which is then fed to vertical grinding mills for fine grinding. The grinding circuits are arranged so that unwanted “trash” can be removed and coarse particles re-circulated for further grinding to optimise performance in the next stage of the process.

Name of the process	Schematic picture of facility	Processing explanation
Coarse milling ore		Milling ore in big mill (SAG mill) to prepare ore for fine milling before flotation
Fine milling ore		Fine milling (Ball mill and other mills) to prepare or for flotation

3.3.4 Flotation Circuit

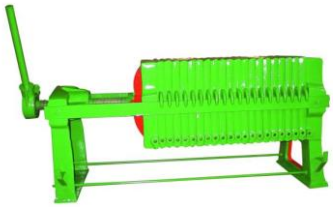
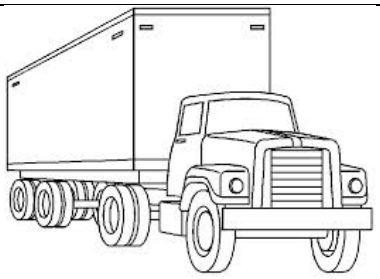
Flotation will be the main process for recovery of a gold and silver concentrate from the ground ore. The process is performed in flotation banks, where the recovery is achieved by conditioning the surfaces of the mineral grains based on the different surface chemistry of the precious metal and rock particles. Air is introduced to the bottom of the banks and dispersed by an impeller driven by an electric motor. The air bubbles rise through the mineral slurry to the surface of the flotation cell colliding with the particles. The hydrophobic particles attach to the rising air bubbles to form froth on the surface, which overflows the flotation cell and advances to the next stage.

The conditioning of the mineral particles prior to discharge to the flotation banks is achieved by addition of a reagent for sulfidizing the particles' surface (Copper Sulphate). Flotation then requires application of a range of reagents to enable bubbles to readily form and be robust enough to collect the target minerals. These reagents include potassium amyl xanthate; dithiophosphate (Aerofloat 208); Frother (Cytec OrePrep F 549) and sodium silicate dispersant ($Na_2O_xnSiO_2$, also known as water glass or liquid glass).

Name of the process	Schematic picture of facility	Processing explanation
Ore conditioning		Preparation of milled ore for flotation. Activation with chemicals ($CuSO_4$ etc.)
Flotation		Main processing unit for producing of gold concentrate. Using chemicals to separate the milled gold pieces from other milled ore minerals.

3.3.5 Concentrate Handling

Final concentrate will be dewatered in a pressure filter with the product being stored in bags prior to shipment from site in sealed containers.

Name of the process	Schematic picture of facility	Processing explanation
Concentrate dewatering		Process of drying/dewatering a concentrate before loading to big bags and sending for smelting in other factories out of Krumovgrad Municipality.
Concentrate transportation		Transportation with special trucks

3.3.6 Tailings

The discharge from the Scavenger Flotation bank will be dewatered to a thick slurry and conveyed by pipeline, combined with mine rock waste and placed in the disposal area of the IMWF. Water reclaimed from the tailings will be recycled to the process plant.

Name of the process	Schematic picture of facility	Processing explanation
Tailings thickening		Tailings thickening is a dewatering process before deposition of tailings in IMWF

3.4 Integrated Mine Waste Facility (IMWF)

3.4.1 Background and Site Selection

The disposal of process wastes has considered disposal methods involving a conventional tailings impoundment as well as alternative disposal methods that can minimise the footprint of the waste facility in a safe and stable manner. The adopted design falls into the latter category and an integrated mine waste facility (IMWF) will receive both thickened tailings and mine waste rock from the Ada Tepe pit. Two sites were initially identified for a potential IMWF, located north and south of the open pit respectively. Preliminary capacity assessments as well as optimisation of the mine and road layout resulted in selection of the south site.

3.4.2 General Description

The concept of the IMWF is to place thickened tailings into cells constructed from mine rock. The mine rock provides the strength required for overall stability and also internal drainage. Water drained from these cells will be recycled to the processing plant. The IMWF will be constructed within two small valleys, being operated as two separate facilities early in the life of the project and later merging into a single facility as operations progress. Rehabilitation of the lower slopes of the IMWF will begin during the early stages of mine operation. DPMK holds an approved mine waste management plan issued by the Ministry of Economy and Energy.

The IMWF structures required for commencement of mining operations will be constructed from the soil and rock excavated to create the platform for the process plant and the roads on the mine site. Once the mining operation begins, the mine rock will be trucked from the open-pit to the IMWF, dumped and spread to construct containment cells for the tailings.

The IMWF will be constructed from the bottom up, with mine wastes placed on starting platforms at the bottom of the valley at approximately 300 m elevation and then progressively built up in benches during the mine life to elevation 450 m. This will allow the lower, completed sections of the facility to be progressively rehabilitated and vegetated during the life of the mining operation.

Some 15.1 million tonnes of mine rock and 6.2 million tonnes of tailings will be stored within the IMWF by the end of the 8 year life of the mine.

Figure 4 shows the location of the IMWF, with Figure 5 showing a 3D model view of the IMWF showing the benched construction.

A geochemical characterisation programme of the waste rock to be used in the IMWF and the tailings to be disposed was carried out and concluded that the potential for acid generation from either of these components is very low, as the deposit is a low-sulphidation type.

Figure 4: Map to show the footprint of the IMWF.

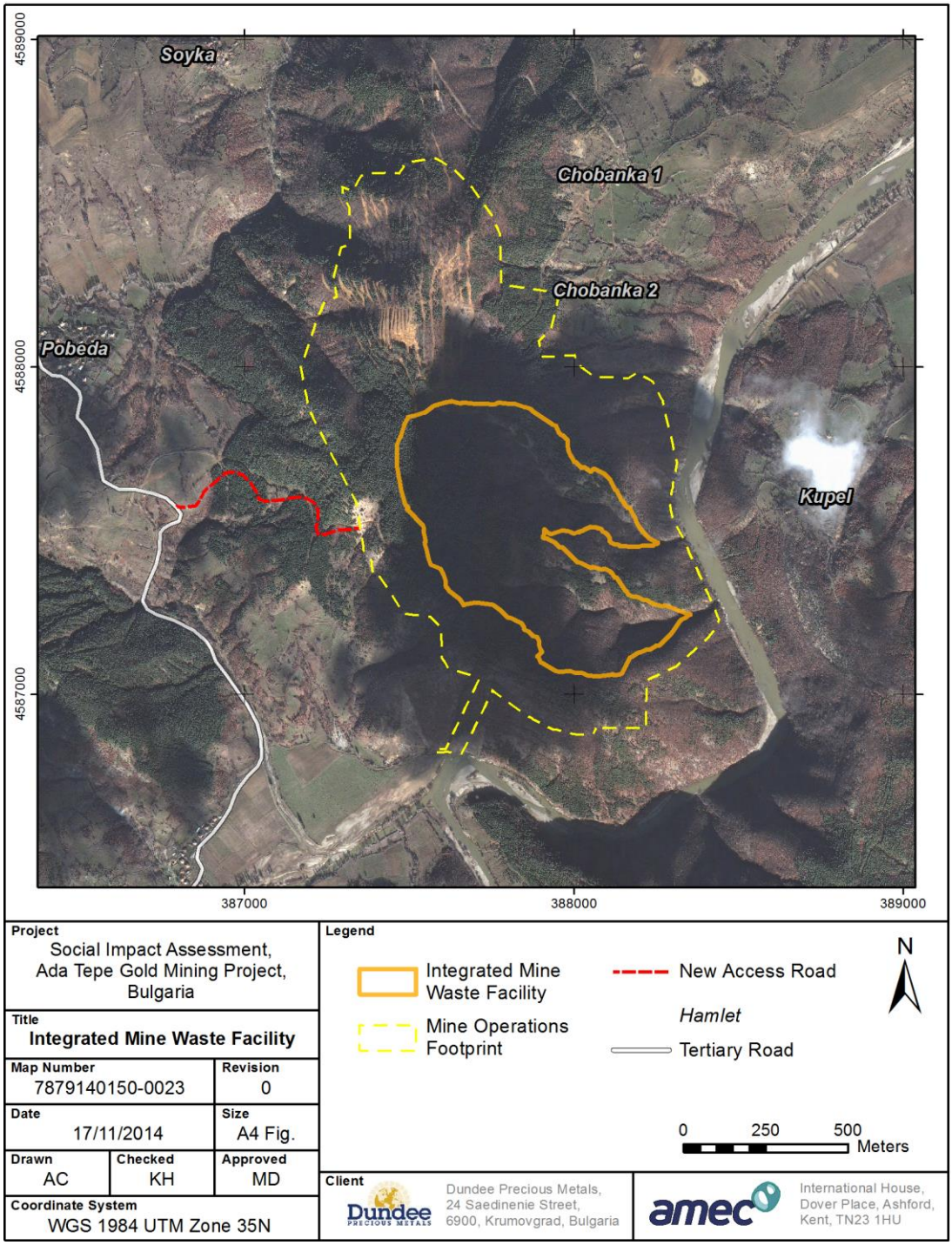
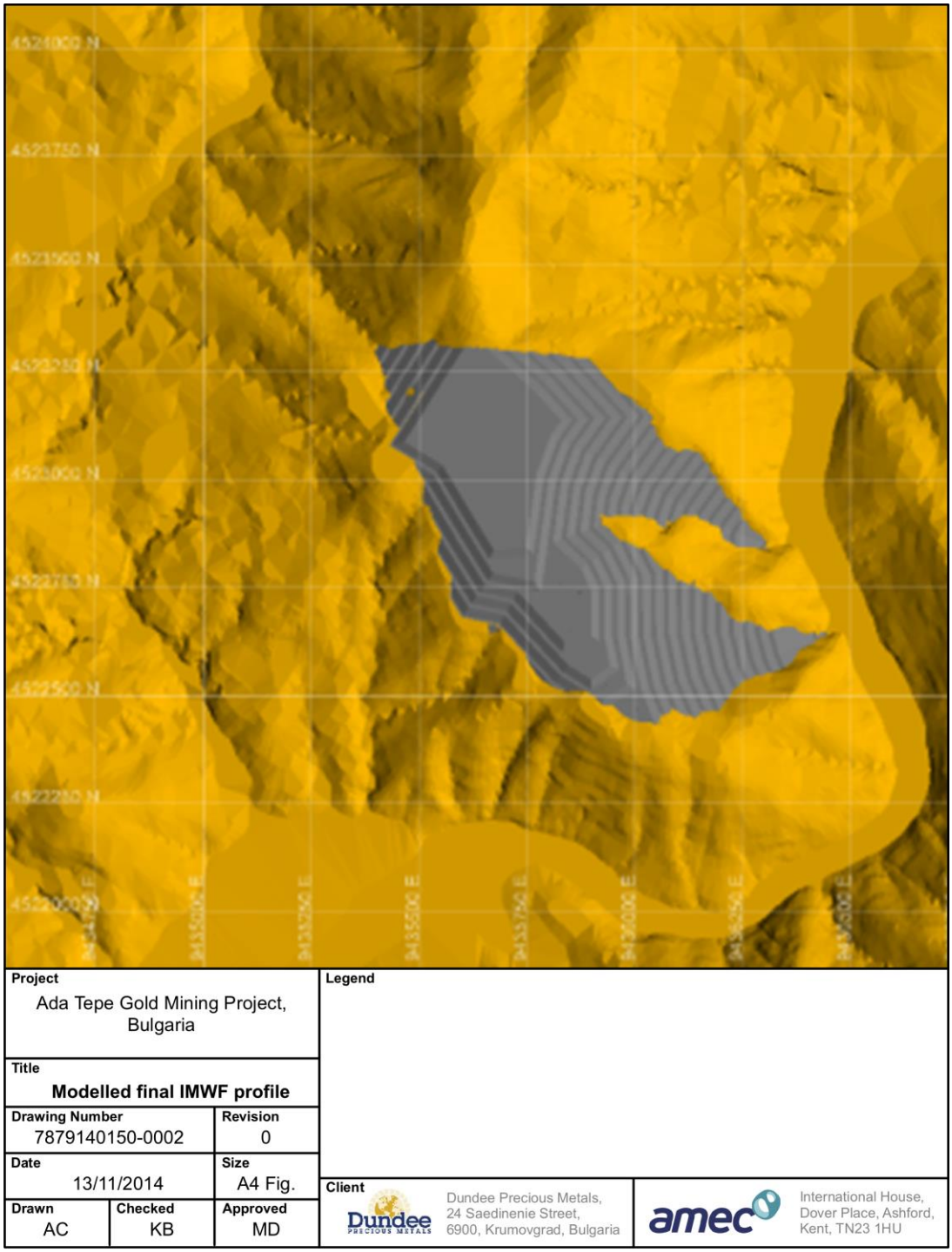


Figure 5: Graphic to show the modelled final profile of the IMWF.



3.5 Water Management

3.5.1 Introduction

The project water management plan is central to maintaining an appropriate environmental and operational performance for the project. The principle adopted for site surface water management is to intercept and divert away water flowing towards operational areas and intercept and collect water in contact with operational areas. This contact water may then be used in the Project or discharged, after treatment, in line with the discharge permit. In operation, the process plant will source its water mainly from recycle of water drained from the IMWF supplemented by water harvested from other operational areas. Any additional water (make-up water) needed (see Section 3.5.2 below) will be taken from a borehole well located approximately 0.3 km southwest of the process plant near the Krumovitsa River. The IMWF will be a fully drained facility and will not contain a water pond.

A dual reservoir system has been developed which has resulted in the mine being able to adopt a zero discharge water management strategy. One of the reservoirs will be used to store water used on the project (water that is recycled and make-up water) and the second reservoir will be used to manage storm water and water that flows into the open pit. This allows the Project to harvest and recycle water and deal with rainstorm events in a safe manner that avoids downstream pollution.

Should it be required that water must be discharged to the environment, all such water will be treated in a waste water treatment facility to meet the drinking water quality standard.

3.5.2 Water Supply

The water balance is forecast to be positive on an annual basis under normal conditions, i.e. the project will harvest and recycle sufficient water to be able to operate through collection of precipitation over its operational footprint. However, any additional fresh water will be supplied from a borehole well located southwest of the process plant near the Krumovitsa River. A Water Consumption Permit to cover this has been obtained by DPMK for a 10 year period.

3.6 Communications

The mine site will be linked to the Public communications network in the town of Krumovgrad using fibre optic cable which will support both data and voice communications. A repeater system will provide the infrastructure to enable hand-held and mobile radio sets to communicate around the site.

3.7 Access Road and In-plant Construction

The proposed access road to the plant site is an existing Public secondary paved road approximately 2 km in length which connects with the main Public road leading to the town of Krumovgrad. In anticipation of increased traffic on the section of this secondary road

which runs between Zvanarka and Pobeda, seven passing points will be constructed to ease vehicle flow and the road bed will be upgraded to accommodate heavy vehicles. The second portion of the access road from the paved road to the plant will follow an existing dirt road for approximately 950 m. This road will be constructed and paved with a finish layer of bitumen - crushed stone mixture to minimize dust emission.

Within the Project site, a 950 m long internal road will connect to an exit from the mine open-pit and provide access to the crusher area. This will be constructed to carry heavy haulage vehicles with limited Public access. This road will be surfaced with gravel maintained by frequent grading and water sprinkling.

The IMWF embankment access roads (with no Public access) will provide access from the open pit to the two water management embankment dams. One road will be 1.9 km length and will connect the open pit with the north embankment construction site. A second road 760 m long will connect to the south embankment construction. It will be surfaced with gravel maintained by frequent grading and sprinkled as necessary.

During the construction phase of the Project there will be a need to transfer 14 vehicles to the site via a mix of low-loader and escorted abnormal load vehicles. During the operational phase, gold concentrate and haulage of supplies and materials will generate approximately 920 trips per annum. Vehicles types will vary in weight between 3.5 and 20 tons.

3.8 Effluent

Sewage from the various plant site buildings will be treated by means of a packaged Tertiary Wastewater Treatment System. Waste such as hydrocarbons from equipment maintenance will be stored for collection by contractors who will remove it from site and dispose of in accordance with the applicable regulations. General waste including office waste and waste from the meals areas will be collected by a licensed waste contractor.

3.9 Fuel Storage and Distribution

Diesel fuel storage will be provided to supply fuel to process equipment, light vehicles, the mining fleet and mobile plant and equipment. All fuel required at the plant site will be delivered in tanker trucks by commercial suppliers. The fuel storage area will be bunded to prevent spillage of fuel contaminating the site area or watercourses. Minor quantities of petrol that may be required can be obtained from local fuel distributors.

3.10 Vehicle Washdown Facilities

A vehicle washdown facility will be provided adjacent to the diesel fuel refuelling area. It will comprise a bunded concrete slab sloping to a settling sump. Captured rainfall and diesel spillage from the adjacent diesel refuelling facility will also be directed to this sump. A sump pump will transfer dirty water to an oil/water separator.

3.11 Power Supply and Reticulation

The plant electrical power will be supplied by the power distribution company via a proposed underground high voltage cable supplied from the Krumovgrad 110 kV / 20 kV Substation. This cable will be laid adjacent to the existing access roads. A 20 kV main substation will be established at the plant site to facilitate power distribution to various areas within the plant. A 1000 kW emergency backup generator will be installed to drive critical loads during power outage.

3.12 Buildings

Infrastructure buildings are classified as either architectural, control rooms or industrial. Architectural buildings include administration offices and ablution facilities. Control rooms include the crusher control room and the main process plant control room. Industrial buildings include workshops, warehouses and buildings that house process equipment.

The assessment of building requirements has been based on the number of personnel and the functions required in each particular area. These buildings will be constructed of reinforced block-work or brick. Roofing will be corrugated steel and elevated floors of timber, with concrete on ground floors. Locally-derived construction materials will be used to the maximum extent possible.

3.13 Fire Protection

Fire protection will consist of the provision of fire hydrants, fire hose reel cabinets and fire extinguishers placed strategically around the facilities in accordance with the requirements of the relevant regulations. Fire-fighting water will be supplied from a reserved volume in the fresh water reservoir.

3.14 Security

All persons entering the Process Plant and mine facilities areas will be required to pass through the continuously manned boom gate adjacent to the administration building on the access road. Security guards located within the administration building will control entry and exit of vehicles and personnel. Search and inspection of personnel, bags and items leaving the plant will be carried out at this facility.

A stock fence will be constructed around all project facilities including the process plant, Integrated Mine Waste Facility, mine, and water reservoirs. Security fencing with lockable access gates will be installed locally around the remote pumping facilities.

3.15 Project workforce

The Company aims to recruit 90% of the workforce from the local area and environs in order to maximise the benefits of employment and skills training opportunity. This

approach also minimises the need for additional worker accommodation as well as pressure on local housing resources. It also reduces work-related travel in a regional sense. A workers camp will not be required, which also contributes towards minimisation of project footprint.

3.16 Closure and Rehabilitation

3.16.1 Objectives

The aim of the proposed decommissioning and rehabilitation of the Project is to achieve the following objectives:

- Establish a beneficial after-use with revegetation work using appropriate indigenous species;
- Protect Public health and safety;
- Mitigate or eliminate environmental damage and provide for sustainable environmental development;
- Minimise any adverse social and economic impact.

The adopted closure strategy will allow the site to be left in a condition that meets the following criteria:

- Physical stability – any remaining structures must not be an unacceptable hazard to Public health or safety, or to the immediate environment;
- Chemical stability – any remaining materials must not be a hazard to future users of the site, to the Public health, or to the immediate environment; and
- Biological/community stability that enables establishment of an appropriate land-use that is harmonised with the adjacent areas and with the needs and desires of the Community.

A plan for closure of the open pit, the ore processing plant, the IMWF, the ancillary facilities and unnecessary infrastructure was prepared by DPMK together with the construction and operation designs. This plan will be updated when technical design package is finalized. In order to assess the further and ongoing requirements of stakeholders (principally, the local community), consultation will be carried out with appropriate community representatives.

DPMK is ready to lodge a proposed financial guarantee for closure and rehabilitation activities on the basis of the Closure and Rehabilitation Plan approved by Ministry of Economy and Tourism, according to the requirements of the Subsurface Resources Act and Concession Agreement.

The key features of the Plan are set out below.

3.16.2 Open pit

The following was adopted for the closure of the open pit:

- The final pit walls and slope gradients ensure safety and stability;
- Technical and biological rehabilitation of the open pit site;
- Continuous monitoring of the quality of surface and groundwater flows to assist in the design of mitigation measures;
- Environmentally sound use ensured by means of all necessary engineering and drainage works, and establishing a suitable vegetation cover where practicable.

Different options for the open pit closure and its incorporation into the surrounding environment will be considered and discussed during the project operation, consistent with the requirements and wishes of the local community and the scope and objectives of protection established for the East Rhodopes Protected Area.

3.16.3 Process Plant and Infrastructure

Surface installations and foundations will be demolished and removed from the site.

The surface of the process plant area will be reshaped and revegetated as appropriate to the surroundings and to the agreed end use of the site at that time. Alternatively, buildings, roads and other infrastructure may be retained as required for any further end-use.

3.16.4 IMWF

Closure of the Krumovgrad IMWF will involve conventional practice for mine waste rock facilities.

Drainage into the IMWF will be collected in an under-drain system that prevents the build-up of a water table within the rock and tailings. Water draining from or through the IMWF will exit at the toe of the underlying natural ground gulley forms. During operations, water reporting to the sumps at the toe of the gulleys will be recycled to the process plant. Following operations, the quality of water reporting to the sumps will be monitored.

The IMWF will be constructed from the bottom up with horizontal benches at 10 m vertical intervals with the intervening slope constructed at 2.5H: 1V. During operations, the external faces of the completed portions of the IMWF can be covered with topsoil and vegetated. This means that the majority of the IMWF can be rehabilitated prior to the end of the mining operations.

3.17 Alternative options for the Project

As required under Bulgarian EIA regulations and in line with best practice, the Project design engineering and environmental impact assessment teams considered alternative options for the Project development, including the “zero” option that the Project does not go ahead.

The location of the open pit mine is determined by geological factors and it is beyond the scope of an ESIA study to consider the targeting of the mineral resource. However, the study considered a range of alternative options for mining, processing and waste management and the findings are summarised in the following table.

Type of Option	Available Options (selected option in BOLD)	Assessment findings
Mining Method	Underground mining	Underground mining can minimise surface disturbance but in this case, the deposit is very shallow and this method would be unsafe and impractical
	Open pit mining	Open pit mining is the only available method to enable efficient and safe extraction of gold ore at the site.
Ore Processing Method	Conventional gold ore processing using cyanide to produce gold metal	The method involves use of cyanide that would maximise recovery of gold, but its application was deemed unacceptable by the local community and is associated with environmental impacts.
	Production of a gold ore mineral concentrate using physical methods of separation	Less efficient gold recovery but dispenses with use of cyanide and avoid environmental impacts associated with its use; further processing to produce a metal is done off-site.
Mining and processing wastes management	Storage of waste rock in a conventional waste rock dump and separate storage of process wastes (tailings) as a slurry in a conventional tailings impoundment with a pond	This option would require a significantly larger footprint than the selected option and would require construction of a tailings dam which is an expressed concern of the local community.
	Storage of waste rock and thickened tailings within an Integrated rock/tailings facility	This option minimises the overall Project footprint enabling containment within State-owned land; it also avoids the need for a conventional tailings dam and the facility can be progressively rehabilitated while the Project is operational
Sourcing of Project water during dry years	Construction of a Project supply reservoir, capturing flow of a tributary of the Krumovitsa River	This option requires additional project footprint and construction, operation and closure of such an impounding facility requires special care and attention
	Installation of an abstraction well into the Krumovitsa River gravels	The footprint of this option is insignificant and construction, operation and closure pose no special challenges or risks. Abstraction is expected to be limited due to process water recycling.
The Zero Option	The Project does not proceed	The benefits of the project would be foregone (employment opportunity and inward investment); negative impacts arising from the Project would be avoided

4.0 SUMMARY OF POSSIBLE ENVIRONMENTAL AND SOCIAL IMPACTS

4.1 Introduction and methodology

Impact assessment includes the following steps to provide the information that project stakeholders must consider in their judgement of the acceptability of a proposed development:

- characterises (using data derived from Publications, field surveys and monitoring) and considers the current (baseline) conditions in a project's environmental and social setting
- analyses the way in which the project will interact with, or affect the environmental and social media
- identifies measures that will be included in the project's implementation that will avoid, reduce or compensate for negative impacts and enhance positive or beneficial impacts
- forecasts the significance of the various impacts assuming mitigation measures are implemented, with reference to appropriate regulations, standards and guidance.

This process allows optimisation of the Project design to avoid and reduce impacts and the compilation of management or action plans that are designed to ensure that the cited mitigation and management measures are implemented and that the forecast performance of the project against the cited regulations, standards and guidance is achieved or bettered.

In order to carry out the above work, DPMK contracted a team of accredited independent ESIA specialists from Bulgarian organisations who were assisted by additional experts with international experience on mining projects. This team undertook the review and baseline survey work, liaised closely with the Project design team to assist optimise Project performance, completed the impact assessment and compiled ESIA reports.

As noted in Chapter 1.0 above, EBRD required the Company to provide additional information and undertake further studies to align the Project and its environmental and social assessment documentation with the EBRD Performance Requirements (EBRD PR) and the International Finance Corporation (IFC) Performance Standards (PS). The result was a series of supplementary environmental and social assessment documentation (termed the Supplementary Lenders Information Package), which together with the local EIA form the ESIA package for the Project. In addition, the Company has agreed an Environmental and Social Action Plan with the EBRD to ensure that the Project meets the PRs and PS during the life of the Project and during closure. This additional supplementary work was undertaken by a combined Bulgarian and international ESIA consultancy team.

A summary of the findings of the ESIA is presented below. Full details are available in the ESIA package.

4.2 Air Quality and Noise

4.2.1 Existing conditions

The Project is located within a Continental-Mediterranean climatic regime. The low-mountainous topography of the Eastern Rhodope Mountains allows free flow of both Mediterranean and cold Continental air during Winter. There are no major sources of industrial air emissions in and around Krumovgrad and low levels of dust and pollutants have been measured, indicating that the existing air quality is generally good.

4.2.2 Forecast impacts

The Project will give rise to air emissions such as dust and gases of greenhouse gases (GHG) through the use of equipment, and the use of fuel and electricity and blasting.,

In regard to dust, it is typically generated by the following activities, especially during dry weather:

- Clearing of vegetation, soils and overburden;
- Blasting and excavation of ore and waste rock;
- Haulage of rock over unsealed roads;
- Rock crushing (prior to addition of water in the process plant);
- Wind erosion of bare surfaces.

All of these potential impacts are well understood and are amenable to mitigation by use of industry-standard mitigation measures such as water sprays and avoidance of dust problems by ceasing certain operations when weather conditions and proximity to sensitive receptors requires.

Gases will be emitted from truck engines and through blasting, but the process plant uses technology that avoids high temperatures and pressures and produces very little gaseous emissions.

In regard to emissions of gases that potentially may constitute local air pollutants, the impact assessment considered the location of sensitive receptors (dwellings and soil resources) relative to the project as well as the proposed activities from construction through to closure. It took into account weather conditions, notably wind speed and direction and via mathematical modelling, derived predictions for values of air pollutants around the site through the course of the Project. These predicted values were compared with Bulgarian and international standards and this indicated that emissions would not affect air quality such that limits protecting human health would be exceeded.

This analysis forms the basis for an Air Quality Management Plan whose objective is to ensure that the above prediction is fulfilled.

A study was also conducted to estimate potential greenhouse gas emissions. This followed the EBRD Methodology for Assessment of Greenhouse Gas Emissions and the WBCSD/WRI Greenhouse Gas Protocol. Direct GHG emissions were estimated at 834 t CO_2 per year, while total (direct and indirect) emissions are 53 195 t CO_2 per year. The following direct and indirect emission sources were identified and included in the scope of the inventory:

- Direct emissions mostly originating from mining plant engine exhausts (around 699 t CO_2 per year); the use of explosives will generate around 119 t CO_2 per year; passenger transport emissions are very small at around 16 t CO_2 per year
- Indirect emissions from the production of electric power for the Project are estimated to be around 44 569 t CO_2 per year; this is the most significant source of GHG emissions.

Additional indirect emissions result from three main sources, i.e., production of materials for Project construction and operation (3 028 t CO_2); transport of those materials (182 t CO_2), transport of gold concentrate (126 t CO_2) and transformation and distribution losses in the electricity network (4 457 t CO_2). Emissions related to material supply mainly concern use of explosives, mill grinding balls and sodium silicate.

Based on this assessment of GHG emissions, the DPM Krumovgrad project falls within the medium-low category (20–100 kt CO_2 emissions per year) according to the EBRD's methodology of emissions characterisation.

4.3 Water

4.3.1 Existing conditions

In terms of surface water, the Project is located within the Arda River basin and falls within Bulgaria's River Basin Management Plan for the East-Aegean Region that provides for monitoring and management in line with defined objectives for protection and improvement. The site is drained by tributary streams that flow a short distance north into the Krumovitsa River. These streams normally flow only during the Autumn, Winter and Spring but the Krumovitsa has a permanent flow. The quality of the latter is impaired by discharge of sewage from Krumovgrad and other settlements.

From a groundwater perspective, there are no significant aquifers underlying the Project site or immediate area and the underlying rocks hold limited amounts of water as interstitial and fissure flow formations, especially in weathered zones. Overlying Quaternary alluvial gravels underlie the Krumovitsa valley floor and these provide a source of satisfactory quality drinking water under Bulgarian regulations.

4.3.2 Forecast impacts

The Project has two main classes of *potential* impact upon the water environment:

- Water contamination;
- Disturbance of levels, flows and drainage patterns.

Water *contamination* is most readily caused by land clearance and excavation that can result in silt-laden run-off being discharged into streams. Contaminated drainage from rock and ore containing elevated levels of metals and salts can affect surface water and groundwater and accidental spillage of fuels and reagents represents an additional hazard. All of the foregoing has required appropriate design of the Project in the first instance, to design-out the potential for such problems as well as the adoption of a Water Management Plan. The latter includes the following key features (also see Section 3.5 above):

- Site drainage installed to intercept and divert away clean water inflows and to capture and use water that is in contact with operational areas;
- Maximum re-use/re-cycle of all Project water, including that used in the processing plant and the IMWF.
- Discharge of any residual effluents during operation only in line with Bulgarian water quality standards, following treatment to drinking water standards.

These mitigation measures are designed to ensure that no programmed discharge of effluent is required and there is no significant impact on quality of surface and ground waters. The emphasis on capture and recycle of water in contact with operational areas, waste rock, etc., ensures that any concern regarding contamination by, for example, contact with materials containing naturally elevated levels of arsenic (see *Land Use and Soils* section below) is addressed.

Looking at the potential for *disturbance* of the water environment, it is unavoidable that land-take for Project and creation of operational areas (the open pit, haul roads, plant site, waste management facilities, etc.) will require drainage lines on the site footprint to be re-routed. The excavation of an open pit creates the potential to disturb any aquifer characteristics and demand for water to supply the Project can potentially impact on water supplies, whether from the surface or underground. Again, these potential problems are directly addressed by the project design and management, with the following measures to be adopted:

- Overall Project footprint limited by selection of appropriate waste and water management methods;
- Water re-use/recycle to limit need for additional water to years of very low rainfall, and in such case, water to be drawn from the Krumovitsa valley gravel aquifer that will not affect local people.

Bearing in mind the limited nature of the existing underground aquifers as well as the steps taken to avoid impact on surface waters by application of a comprehensive water management plan, it is concluded that there is low risk of significant impact on the water

environment that might affect local communities or wildlife. This risk is also minimized through DPM Krumovgrad's accepted strategy to achieve zero discharge.

4.4 Land use and soils

4.4.1 Existing conditions

The Project's footprint encompasses only State-owned forestry land. The soils are shallow and of low fertility, especially on the steeper slopes. There appear to be naturally elevated levels of arsenic, chromium and nickel in some of the Ada Tepe forest soils, due to the influence of underlying geology.

4.4.2 Forecast impacts

The proposed Project creates *potential* for two types of impact:

- Soil removal/loss to create the operational areas;
- Soil contamination due to wind blow from mineral-laden dust or from accidental spills.

As has been noted, the footprint of the Project has been limited as far as possible to minimize land take and ensure that no private or commercially productive land is affected. Assessment of impacts from dust creation indicates very limited potential for significant dust blow with, in any case, dusts containing mainly materials that are common soil constituents. Management plans have been designed to ensure that potential for water erosion is minimized, and spill avoidance and containment is practiced. Finally, provision has been made to strip and store soils from operational areas and to re-spread these as part of the planned site rehabilitation.

The overall impact on the land use and soil resource over the 85 ha of the Project footprint is therefore significant, but not substantial in terms of the local area and the region. Furthermore, to the extent practicable, rehabilitation and revegetation of operational areas will be undertaken on a progressive basis to minimize the area remaining unrestored at any one time. This applies, for example, to engineered surfaces that are intended as permanent features as well as bulk mine/process waste depositary areas as they are completed.

4.5 Flora and Fauna

4.5.1 Existing conditions

The Project site falls entirely within the Site of Community Importance (SCI) BG0001032 Eastern Rhodopes Natura 2000 area protected under the Directive 92/43/EEC (Habitats Directive) and lies approximately 3.8 km from the territory of Special Protection Area (SPA) BG0002012 Natura 2000 area "Krumovitsa", protected under the Directive 79/409/EES (Birds Directive). The total area of SCI Eastern Rhodopes is 11,200 ha. The project site

does not affect or fall within close proximity (within 5 km) of any other protected sites or areas. About 12 km from the project site is the SPA BG0002013 Studen Kladenets, which has a global significance as a representative site of the Mediterranean biome. Part of this SPA is occupied by the only strict nature reserve in the Eastern Rhodopes, “Valchi Dol”.

Most of the project footprint is currently covered by primary (15%) and secondary (85%) forest vegetation part of which has been deforested. Primary vegetation on Ada Tepe started to be used by the local communities around 100 years ago (new historical time). Primary vegetation, consisting mainly of xeroterm mixed oak forests, has been destroyed in the past and is now present only as individual trees or copses. Black Pine (Pinus nigra) and Locust (Robinia pseudoacacia) trees planted some 40 years ago, now occupy most of the area. The vegetation cover has been affected by human activity, related to the presence of many human settlements and activities such as grazing and forestry, although in some areas restoration of natural vegetation has been observed. The main reasons for deforestation are use of wood for heating and foliage for livestock food during winter and this process has been on-going for some 40 to 50 years. In order to stop erosion, the Ada Tepe area was planted with commercial species.

Habitats established in the project area that are subject to protection (Annex I of Directive 92/43/EEC) within the SCI Eastern Rhodope include: *6220* *Pseudo-steppe with grasses annuals of the *Thero-Brachypodietea,* which is specified as priority habitat. However, this habitat is represented only in small areas in the project area; 5210 Arborescent matorral with *Juniperus sp*. is also found only in a few areas within the project site; 91M0 Pannonian-Balkanic Turkey oak– sessile oak forests - one of the main habitats protected within the Eastern Rhodope is represented with several small and fragmented groves some of which are on the Ada Tepe hill; *92D0* Southern riparian galleries and thickets (*Nerio-Tamaricetea* and *Securinegion tinctoriae*) – covering about 0.3 - 0.4 ha within the Project area; and 6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) – represented only by some fragments within the Project area, that however are highly disturbed by human activity and have atypical species composition.

The Petrophile Community (shrubs), found on the slopes of Ada Tepe has national environmental conservation importance, representing the habitat "Thracian ling". *Cistus incanus*, *Koeleria splendens*, *Hypericum olympicum* and others prevail. The habitat is included in Volume 3. Natural Habitats of Bulgaria’s Red Book. The lower Southern slopes of Ada Tepe are highly disturbed pastures, mixed with Oriental Hornbeam (*Carpinus orientalis*), which occupy a relatively small area.

In regard to vertebrate species, composition is classed as abundant in the area, notably for birds, reptiles and fish (Krumovitsa River). From the species subject to protection within SCI Eastern Rhodopes, the two tortoise species - the Hermann Tortoise (*Testudo hermanni*) and the Spur-thighed Tortoise (*Testudo graeca*) are most significant. Both species are included in the Red List of the International Union for Conservation of Nature (IUCN-2002) as globally threatened reptile species, categorized in the following categories: *T. graeca* - Vulnerable (VU A1cd – ver 2.3), *T. hermanni* – Near Threatened (NT ver 3.1). The tortoises are also listed in the BERN Convention (included in Annex II), in the Directive 92/43 of EEC (included in Annex II and IV) and in the CITES Convention

on international trade with threatened species from the Wild Flora and Fauna (included in Annex II).

The Project is located in critical habitat according to the EBRD Performance Requirement 6 (PR6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources) for the two endangered *Testudo* species. Critical habitats must not be converted or degraded, hence the Project should not lead to a reduction in the populations of any endangered species. This requires implementation of a biodiversity action plan to avoid, minimise or mitigate potentially adverse impacts, and to achieve no net loss (and preferably a net gain) of the two impacted species. See section 4.5.2.

The presence of bat species afforded strict protection under Annex IV of the Directive 92/43 of EEC that have been recorded on the project footprint area include: Greater Horseshoe bat (*Rhinolophus ferrumequinum*) Greater mouse-eared bat (*Myotis myotis*) / Lesser Mouse-Eared bat (*Myotis blythii*); Common Bentwing bat (*Miniopterus schreibersii*); and Geoffroy's bat (*Myotis emarginatus*) (mostly linked to nutrient activity and not for daily shelters). A small group of about 8-10 individuals of Greater Horseshoe bat (about 0.1% of the population in the Natura 2000 protected area) has been found to inhabit the old Thracian mine. These individuals use the mine footprint and surrounding areas as a feeding area.

Other small and large mammals listed as protected with possible presence or movements in the project area may include Wolf (*Canis lupus L.*), Brown bear (*Ursus arctos L.*), Otter (*Lutra lutra*), Marbelled polecat (*Vormela peregusna*); European Ground Squirrel (*Spermophilus citellus*); and Mouse-tailed Dormouse (*Myomimus roachi*). With the exception of wolves, all the above large mammals are strictly protected under Annex IV of the Directive 92/43 of EEC. Apart from Otter, sitings of these other mammal species have been rare in the project site and surrounding area.

The composition of invertebrate species over the project area is typical of forest and open land habitats in the region. The presence of *Callimorpha (Euplagia) quadripunctaria*, listed for protection under Annex II of the EU Habitats Directive and under the BERN Convention (revised Annex I), has been reported in the area of the project although it is represented with a relatively small population.

Birds established at the project area, subject to conservation and listed in Annex I of the Birds Directive in the SPA BG 00002012 Krumovitsa, and reported as nesting, although in low numbers, include: Black Stork (*Ciconia nigra*); Short-toed Eagle (*Circaetus galicus*); Black Kite (*Milvus migrans*); European Roller (*Coracias garrulous*); and European Nightjar (*Caprimulgus europaeus*). Barred Warbler (*Sylvia nisoria*) and Red-backed shrike (*Lanius collurio*) are reported to inhabit shrub communities, and non-dense groups of trees with many shrubs in the open spaces and pastures in the area of Ada Tepe. SPA Krumovitsa is one of the few remaining breeding sites in Bulgaria for the Egyptian vulture (*Neophron percnopterus*). The project area, however, is neither a breeding nor foraging site and therefore the project poses no concerns for destruction of important habitats for this species.

4.5.2 Flora and fauna assessments and implemented protective measures

The following table presents the actions that DPM Krumovgrad has implemented to date in order to assess and protect habitats and species, especially tortoise species.

Date	Description
2008	Compatibility Assessment commenced on the terrain Ada Tepe project area.
2010	Finalized Report for Assessment on the Compatibility of Conservation Objectives of the Protected Area Eastern Rhodope and Protected Area Krumovitza with the Investment Proposal "Extraction and Processing of Gold-Bearing Ore from the Krumovgrad Exploration Area" and sent to authorities as integral part of EIA procedure.
2011	The EIA Decision from the Ministry of Environmental and Water was made public. The Compatibility Assessment Report conclusions and proposed measures are integral part of stated conditions in the EIA Decision.
May 4, 2012	EIA decision to relocate tortoises was supported by the owner of the land (Krumovgrad Forestry Department) with positive statement supporting relocation of these species..
June 15, 2012	Relocation of tortoises required and a permit to be issued. The application for issuing was submitted to the Ministry of Environment and Water.
June 22, 2012	EIA decision to build a protection fence to keep the tortoises out of project area after relocation. Local forestry Department as owner of the land gave a positive statement for building of tortoise protective fence.
June 25, 2012	Permit 464/25.06.2012 for Relocation of tortoises was issued by Minister of Environment and Water.
Between July 9 and 20 July, 2012	A number of letters exchanged between Regional Inspectorate of Environment and Water – Haskovo (RIEW – Haskovo) and DPM Krumovgrad. The letters determine different aspects of tortoise's relocation and building of protection fence.
July 30, 2012	Owner of the land (local forestry department) has applied for issuing Permit for construction of tortoise protection fence from local municipality, which used from DPM Krumovgrad to proceed implementation of above written obligation to build the protection fence.
September, October, 2012	Tortoise's relocation for 2012 season is completed and fence is built.
January 2013	According to conditions written in Permit 464/25.06.2012 for relocation of tortoises, Report for relocated species for 2012 was sent to RIEW – Haskovo.
March 2013	Field detour about integrity of the fence after winter was conducted. In April the fence was repaired.
May and June 2013	New field season (2013) was started and relocation activities were conducted.
May and June, 2013	Tortoises monitoring was conducted as integral part of Biological monitoring as a part of later approved by authorities Environmental Monitoring Plan.
August 1, 2013	Experts from RIEW – Haskovo visited the site and prepared a written protocol, concluding that measure for relocation of tortoises and the protection fence of the EIA Decision was fulfilled, referring to the fence and the completed Tortoise relocation process. In the protocol there are no additional obligations are quoted out of this stated in the EIA decision.
September, 2013	Report for monitoring of fauna species as a part of Biological Monitoring was prepared by the Natura 2000 expert including monitoring of the tortoises in relocation places and reference zones in close proximity of Ada Tepe.

Date	Description
January, 2014	Report for relocated species for 2013 was sent to the competent authority (RIEW – Haskovo).
November - January, 2014	Submitted and approved Environmental Monitoring Plan with section on Biological Monitoring from Basin Directorate Plovdiv (part "Water"), Executive Environmental Agency Sofia (All parts), RIEW – Haskovo (All parts).
May-June-August, 2014	Tortoise monitoring was conducted as integral part of Biological monitoring.
June, 2014	Reptile Monitoring report for Ada Tepe Prospect of the Khan Krum Deposit (data 2013) was conducted.
September, 2014	Development of BAP for the two endangered Tortoise species was developed.
September, 2014	Reptile Monitoring report for Ada Tepe Prospect of the Khan Krum Deposit (data 2014) was conducted.
September, 2014	Amendments to Biological Monitoring and the schedule of its implementation were written as a part of Environmental Monitoring Plan.

4.5.3 Forecast impacts

The possible impacts of the Project on the biodiversity and the proposed conservation and mitigating measures to address them for all phases of the Project have been analysed and described in detail in the appropriate Assessment Report carried out under the national EIA procedure and to meet the requirements of the EU Habitats Directive. The following general impacts on habitats and species are outlined as follows:

- Direct impacts (habitat destruction, mortality, barriers affecting habitat functionality, animals disturbance)
- Indirect impacts (increased danger of fire, danger of accidental pollution, invasion of alien species in natural habitats, impeding the quality of neighbouring habitats due to disturbance, impeding the quality of habitats and food base due to water pollution)
- Cumulative effects (exploitation of satellite deposits, activities on the Krumovitza River, cumulative effects due to intensified traffic, noise pollution, etc.)

The project implies the following specific negative impacts on habitats and species:

Habitats

- Direct destruction of habitat during construction - a negligible impact on both the Natura 2000 protected area and regional levels for Habitat-type 91M0 representing Pannonian-Balkanic Turkey – sessile oak forest; insignificant and negligible impact on the Natura 2000 protected area level, but significant at local level for Habitats 6220 (Pseudo-steppe with grasses annuals of the Thero-Brachypodietea) and 5210 (Arborescent matorral with *Juniperus* sp.). The loss for Habitat 6510 (lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) is significant in terms of the area lost, but is negligible in terms of representation of the habitat (CA Report 2010).

- Indirect insignificant impact on habitats 5210 (Arborescent matorral with Juniperus sp.), 6220 (Pseudo-steppe with grasses annuals of the Thero-Brachypodietea), 6510 (owland hay meadows (Alopecurus pratensis, Sanguisorba officinalis), 91M0 (Pannonian-Balkanic Turkey – sessile oak forest) and 92D0 (Southern riparian galleries and thickets (Nerio-Tamaricetea and Securinegion tinctoriae) (CA Report 2010).
- Influx of invasive plant species and change in the species structure of the habitats, mainly due to the increased urbanization in this part of the Natura 2000 protected area (CA Report 2010).

Species

Invertebrate fauna

- Direct destruction of the habitats and populations during the time of construction and operation. The loss of habitat of *Callimorpha (Euplagia) quadripunctaria* (Annex II – a moth species) on Natura 2000 protected area level is expected to be about 0.56%. The small local population will be significantly affected, however no passage of species in unfavourable conservation status is expected. At the national level, the impact is considered as negligible (CA Report 2010).
- The creation of landfills and stockpiles will cause the long-term deterioration of the Favourable Conservation Status (FCS) of these habitats with respect to their structural and functional parameters (CA Report 2010).
- The introduction and influx of invasive and synanthropic animals, weeds, and ruderal plant species may change the species structure of the habitat and may have negative effects on the conservation status of the Natura 2000 protected area (CA Report 2010).

Ichtyofauna (fish)

- Ichtyofauna will not be directly affected as no discharge of significant quantities of waste water and extraction of significant freshwater quantities from the Krumovitza River is planned (CA Report 2010).
- In varying degrees, a risk of contamination exists by accidents, which may lead to release of greater amount of water under intense rainfall (CA Report 2010).
- The danger of an influx of invasive fish species and a change in species structure in the local area is negligible (CA Report 2010).

Amphibians and reptiles

- Herman's Tortoise (*Testudo hermanni*) and Spur-thighed Tortoise (*Testudo graeca*) in the project area are preserved and this has been confirmed by the comparison of field data with the calculations of data from reference populations (CA Report 2010).

- Tortoise FCS may be directly and indirectly impacted through removal of suitable habitat, habitat cut-off, danger from vehicle movements and general disturbance (noise, light, dust etc.). The number of affected tortoises of both species amounted to 1133 (Assessment on the Compatibility of Conservation Objectives, 2010). The project impact on tortoise habitats is considered as not significant at the zone level: 0,048% - 0,063%. Mitigation measures proposed include relocation and resettlement of both species to new areas in the vicinity but away from the mining project (CA Report 2010).
- The impact on the other species of amphibians and reptiles included in Natura 2000 and inhabiting the territory of the SCI Eastern Rhodope is insignificant (CA Report 2010).

Bats

- Direct destruction of habitats and shelters: this impact will affect mostly the Greater horseshoe bat (*Rhinolophus ferrumequinum*). During the development of the open pit an underground summer shelter will be destroyed. This impact will be irreversible for a very small part of the national population (about 0.06%) and about 0.1 % of the Natura 2000 protected area population (CA Report 2010).
- The formation of permanent stockpiles will deteriorate the FCS of these habitats in terms of structure and functions (CA Report 2010).
- The expected fragmentation of bat habitats will be negligible, given the limited project area and the tremendous wealth of favourable habitats and shelters for bats in the Natura 2000 protected area (CA Report 2010).
- Given the extremely low frequency of occurrence of three of the four bat species established in the area of the IP, the overall impact on them within the SCI Eastern Rhodope is considered as negligible (CA Report 2010).

Large mammals

- There will be no direct impact on mammal species. On a national level, the expected impact for mammals will be minimal. The project site shows low habitat suitability for wolves and brown bears. In respect to otters using the Krumovitza River corridor, the potential impact on a zone level is estimated to affect about 14% of the population in the area, however while no direct impact to their habitat is envisaged, indirect impact from disturbances such as noise and light pollution could affect their behaviour (CA Report 2010).

Birds

- The expected impact of the project on the bird species included in Annex I to the Birds Directive and SPA “Krumovitza” is considered as negligible. No nests of Annex I species were recorded within the project area at the time of the ecological surveys (CA Report 2010).

4.5.4 Proposed mitigation

Alternative Project options have been analysed considering the objectives of the Natura 2000 protected area and the application of Biodiversity Act and Habitats Directive 92/43/EEC. The lowest impact possible alternative for implementation has been selected, according maximum possible protection of the elements of the Natura 2000 protected area (habitats and fauna) subject to conservation, without impact on efficient implementation of the project. In addition, the selected option will not affect the structure and functions of the Natura 2000 protected area as no fragmentation of habitats and impact on bio-corridors are expected. This must be accomplished with the following mandatory implementation of selected mitigation measures detailed in the Appropriate Assessment Report and Biodiversity Action Plan (see below).

The general mitigation measures proposed for protection of habitats and species include: prevention of spread of alien invasive species; limitation of river use for water sources; no exploration of alternative ore deposits or development of other investment proposals in the area; traffic control for prevention of further vegetation destruction and animal disturbance. In terms of project development, land clearance will be limited through reduction of a smaller project footprint and introduction of progressive rehabilitation during the construction and operational phases of the project.

Given the nature and scope of the Project and the planned production and technological structures at this stage there are no specific mitigation measures envisaged for the *Callimorpha (Euplagia) quadripunctaria* and its habitat. As moths are mobile through flight, other nearby areas are likely to be colonised.

The river area will not be impacted and key otter and bat habitat such as riparian vegetation either side of the river banks will not be removed or damaged. In the Spring/Summer months when the river ceases to flow it is likely that otters will migrate to all-year-round water supplies further upstream or downstream and therefore probably only use the river corridor adjacent to the Project when the river is flowing during the Autumn/Winter months. The Project will undertake protection measures for the section of river adjacent to the Project Site, for example installing fencing to control Project vehicles, personnel or any other disturbances. In addition, water, if discharged, must be treated to meet drinking water quality standards in Bulgaria, and no extraction of construction materials from the bed of the Krumovitza River will occur.

The resting habitat (mine entrances [adits], derelict buildings) of the small population of greater horseshoe bats will require a mitigation procedure in order to remove FCS prior to construction. This work will be completed prior to their Spring/Summer arrival on the site. Monitoring of bats will occur in the 2015 biological monitoring season (Spring/Summer). An expert biologist will be recruited for monitoring and analysis of collected data. Reports on the bat population will be developed and after analysis of results, mitigation measures will be discussed and if required, additional measures will be included in the Biodiversity Action Plan.

The potential impact on tortoise species is of particular concern. As a mitigating measure proposed and a condition set out in the EIA Resolution, resettlement of the two endangered tortoise species has been carried out (2012 and 2013) and 403 adult individuals in total have been relocated. A fence (almost 7 km length and 0.8 m height) has been constructed around the Project area preventing possible return of the relocated tortoises. During subsequent monitoring (2013 and 2014), a total of 780 individual tortoises in the relocation and reference areas was marked. Analysed data suggest a low population intensity of the two tortoise species within the monitored area. The monitoring of habitats and species will be applied continually throughout the project lifecycle. In addition to the implemented measures (specified under the EIA Resolution), and the developed **Environmental Monitoring Plan**, for residual impacts on Critical Habitat for tortoises, a **Biodiversity Action Plan** has been developed in line with EBRD PR 6 requirements focusing on the following:

- increased monitoring during the life of Project, and
- implementation of various conservation actions to achieve no net loss through enhancing tortoise populations and improving habitats for such species:
    - Increased and ongoing monitoring through extended field surveys in order to obtain additional information on both tortoise populations.
    - Habitat improvements through thinning forest, planting fruit trees and shrubs for shelter. This will include 10 trees/shrubs per hectare as an ongoing action.
    - Maintain an irrigation programme across fields up to 100 m^2 throughout July and August subject to precipitation levels.
    - Construction of ponds (one pond per 15 ha) and restoration of wells and fountains to enable access to water.
    - Training volunteers to reduce poaching and educational programmes to increase knowledge on need for conservation.
    - Liaison and coordination with local authorities on proposed actions.

The Project has proposed an ongoing evaluation of progress in terms of no net loss and monitoring of the above conservation actions. If relocation and resettlement together with the above actions do not lead to net gains, then consideration of offsets may be required.

When conducting the annual biological monitoring, the monitored areas will be screened for penetration and spread of **alien invasive species**. Using risk management approaches in accordance with the established invasive species type, measures will be taken to avoid or minimize the spread of alien species, and consideration will be given to their removal within the site and areas selected for a potential offset. In addition, the progressive **vegetation restoration plan** developed for the first year after operation will focus on efforts to restore natural habitat types and achieve no net loss assuming progressive restoration of specific target vegetation types. In respect of quality of surface waters, as noted above, a comprehensive **water management plan** has been designed to avoid significant impact on the quality of surface waters downstream of the Project so that no impact on the aquatic ecology of the Krumovitsa River is envisaged.

4.6 Ecosystems services

Ecosystem Services are benefits that ecosystems provide to people, businesses, plants and animals as well as transporting materials (e.g. water, carbon) and energy (heat) around the planet (GRI, 2011):

- Provisioning Services – these are goods or products obtained from ecosystems, such as food, water, timber and other products from plants such as fibre.
- Regulating Services – these include benefits obtained from an ecosystem's control of natural processes, such as climate regulation, disease control, erosion prevention, water flow regulation, and protection from natural hazards.
- Cultural Services – are the nonmaterial benefits obtained from ecosystems, such as recreation, spiritual values, and aesthetic enjoyment.
- Supporting Services – are the natural processes such as soil formation, nutrient cycling and primary productivity that maintain other ecosystem services.

In line with the IFC Performance Standards (2012), the Krumovgrad study has identified and classified Ecosystem Services in the mine study area, and established how these Services are of relevance to local communities and are likely to be impacted by the Project.

Main issues that require mitigation are:

Drinking water supply

Mitigation against impacts to community water supplies will be covered in the Mine Water Management Plan and updates, following monitoring and regular review. This provides for the following:

- Ensuring that existing water requirements of high value ecological and / or community receptors are met before operational requirements;
- Mitigating impacts on existing water users, including communities and ecosystems;
- Complying with standards for all discharges to the environment; and
- Minimising large fluctuations in dewatering rates.

Erosion control, nutrient cycling and soil formation processes

Mitigation measures for erosion control will include those set out in the Hydrology and Soils Sections but in general include:

- Avoiding unnecessary disturbance of stable surfaces;
- Protection of soils outside work areas from damage by prohibiting
- the movement of construction vehicles and equipment outside designated areas;

- Locating temporary construction areas to avoid ground at risk from erosion wherever possible;
- Scheduling works with high erosion potential during the dry season wherever possible; and
- Rehabilitating all disturbed land as soon as practical after completion of works.
- Minimising works in areas where there is the potential for slope instability;

Water cycling

Mitigation against impacts on water cycling will be covered in the Mine Water Management Plan and updates, following monitoring and regular review. This provides for the following:

- Ensuring that existing water requirements of high value ecological and / or community receptors are met before operational requirements;
- Complying with standards for all discharges to the environment; and
- Minimising large fluctuations in dewatering rates.

4.7 Landscape and Visual impacts

4.7.1 Existing conditions

The Project sits within a strongly rural setting, centred upon a wooded hill, surrounded by gently rolling topography of farmland and small settlements that occupy the southern slopes of the Krumovitsa valley. The panorama views below show the Project site and surrounding landscape with the proposed position of Project facilities indicated.

Figure 6: Ada Tepe seen from the Soyka hamlet (960 m from the centre of the open pit)

Figure 7: Ada Tepe seen from Krumovgrad road bridge (3 400 m from the centre of the open pit)

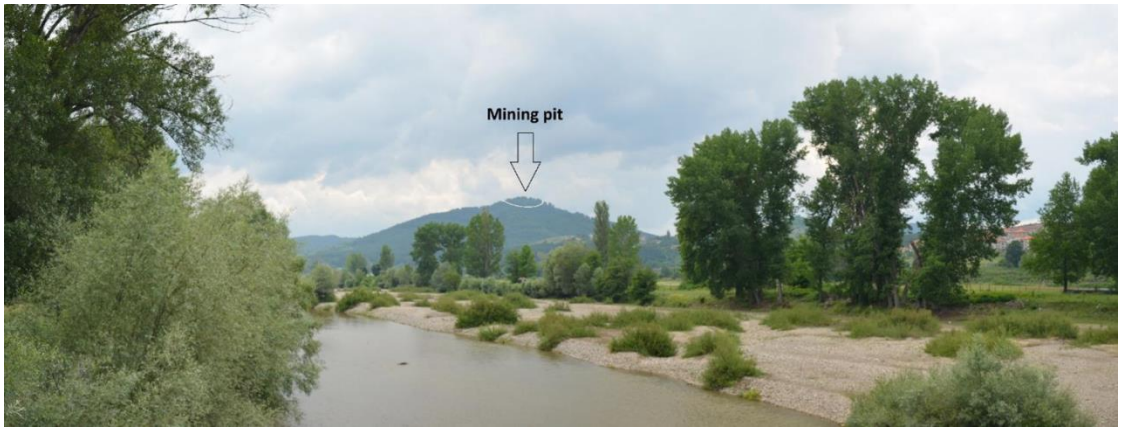
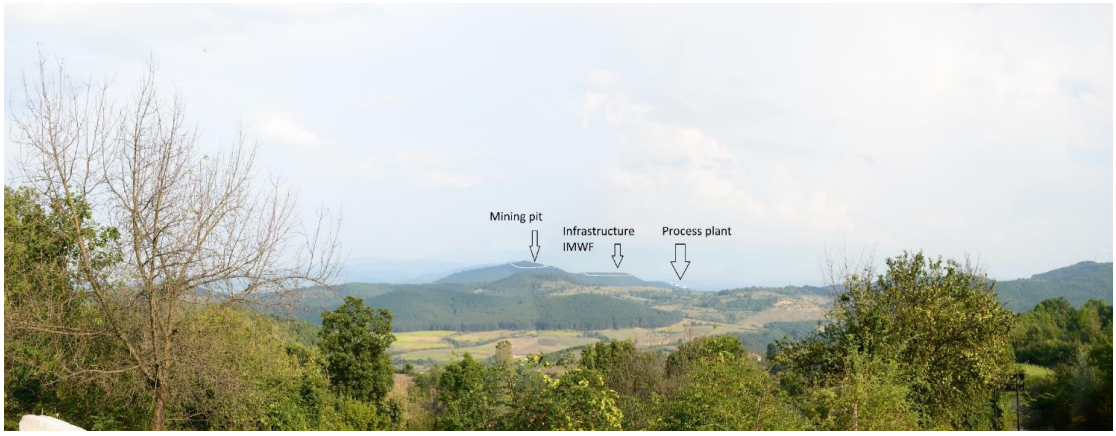


Figure 8: Ada Tepe seen from the Lulichka Hamlet (5 460 m from the centre of the open pit)



4.7.2 Forecast impacts

Construction, operation and closure of a mining project has potential to impact the intrinsic landscape character of its setting and also to impact upon people's visual enjoyment of the setting, i.e. visual impact. The Project will involve creation of an open pit and a waste rock and tailings management facility, both of which will profoundly impact the topography, land use and vegetation of the site footprint, and hence, its appearance. The natural character of the landscape will be modified due to the presence of the project infrastructure elements. However, the Project has a limited operational life of eight years and closure works will include rehabilitation of the IMWF and removal of the buildings and facilities.

The change associated with the excavation of the mining pit will be permanent and irreversible. This landscape change will mostly affect the currently perceived aesthetic visual quality of the Ada Tepe hill vista (visible within an approximate 5 km radius), while the neighbouring lands will sustain indirect negligible or minor changes and retain the landscape functional sustainability.

Analysis of potential receptors (residents of nearby settlements and travellers of visitors to local traffic points and farm areas) reveals that the aesthetic visual impact of the operational Project upon some of them could be moderate-to-high. Within a 2.5 km radius of the Project site, ten studied residential locations could experience a high visual impact and for five of them, the mining development is expected to dominate the local view. It must be noted that these closest settlements are currently populated by only a few households and in some cases completely abandoned.

Within a 5 km radius, 15 more residential locations could also experience high aesthetic visual impact while the Project is operational and 14 (including the town of Krumovgrad) will experience a moderate impact. Within these locations, only some residential buildings will be exposed to visual impacts because of screening by local tree vegetation.

No non-residential receptors, who could experience high visual impact have been identified.

In order to reduce the identified visual impacts a number of mitigation measures will be implemented by DPMK. These include progressive restoration of the IMWF starting within the first year of operation, as well as reducing the colour contrast of the constructed building and facilities. With regard to the functional characteristics of the landscape, biological re-cultivation following closure of the site will strive to achieve better landscape quality than that of the initial environment, primarily by selective tree planting to enhance ecosystem services and restore a native tree habitat, which has been removed from Ada Tepe by previous human intervention.

A further set of recommendations to reduce any potential visual impact from obtrusive and fugitive light from the site will be developed during lighting installation at the site.

4.8 Cultural heritage

4.8.1 Existing conditions

The Krumovgrad region, including the Project area, has a rich cultural heritage, impressive archaeological and natural sights and many traditions, kept alive through local music and dance festivals. Remains of Thracian sanctuaries, temples and medieval fortresses, cemeteries and tombstones have been discovered in the region. The Thracian shrine at “Ada Tepe” is considered the most important of any of the known sites in the Eastern Rhodopes providing information on Thracian religious practices, customs, economic activities and relations.

During 2011 and 2012 there was an extensive archaeological research and excavation at the proposed mine site and at the ancient gold mine at Ada Tepe, currently considered the earliest known gold mine in Europe. The field excavations conducted by leading archaeological experts provided clear evidence for underground gold mining at the south-western slopes of Ada Tepe and uncovered numerous other artefacts considered to be of high scientific value. These artefacts are now stored in the Kardzhali Regional Historical Museum and the National Archaeological Museum in Sofia.

4.8.2 Forecast impacts

Project implementation could jeopardize any existing and undiscovered archaeological remains at the site, for example, remains related to ancient mining activity. This has been addressed by carrying out a rescue archaeological survey by archaeological teams under the supervision of the Museum of the National Institute of Archaeology- Bulgarian Academy of Science (NAIM-BAS), allowing the clearing of the sites and enabling the Project to proceed. The archaeological structures and artefacts discovered have been carefully recorded and deconstructed in the course of the survey, including photographic documentation and 3D modelling for some layered structures. Artefacts were transferred to the museums mentioned above, allowing them to be exhibited for the general public, which maximizes the positive impact from their discovery and subsequent preservation and restoration. The implementation of the project will happen with employment and monitoring by an accredited archaeologist on site, who will ensure that the agreed protocol on handling chance finds is implemented.

4.9 Socioeconomic impacts

4.9.1 Existing conditions

Krumovgrad municipality has an ageing and declining population, although these processes are not as extreme as in other regions in Bulgaria. The population is ethnically and culturally diverse and social cohesion is good. The population's health status is good with the biggest health issue being the lack of medical practitioners. The educational status of the population is also representative of Bulgarian rural regions, with improving levels of educational attainment, but persistent problems with acquiring adequate functional and career skills in the formal school system. A technical high school and local adult training centre in Krumovgrad have potential for development. In general, the full educational, career and social integration of some vulnerable groups, such as the Roma minority and underemployed youth remains a problem.

The engineering infrastructure is relatively well developed but needs maintenance and rehabilitation – especially with regard to the road network and water and sanitation. Krumovgrad municipality has potential to attract significant financial assistance from the EU operational programmes in the 2014-2020 period.

The local economic context is not dominated by any single business sector or activity, with light industry, agriculture, tourism and services generating local income and employment. Of these tourism likely has the biggest development potential.

Local incomes are modest, with low levels of savings and spending. Households supplement their financial incomes with subsistence farming. More than half of the local households regularly utilize for their own needs resources provided by the local ecosystems such as wild fruit gathering, firewood collection, hunting, fishing, beekeeping, etc.

4.9.2 Forecast impacts

Krumovgrad Gold Project expenditure has the potential to have a significantly positive impact on commercial activity within the Municipality of Krumovgrad as well as at district and national level. The Company's preliminary estimates indicate that a total of approximately $164.1 Million would be spent on all aspects of the construction phase over 2.5 years, with closure costs at end of Project of $14.7 million over 3 years. Operational expenditure throughout the life of the Project would result in a positive impact on the economy, increasing commercial activity, creating jobs and increasing incomes.

Employment will be generated through direct, indirect and induced employment opportunities over all project phases. During the Operations phase, the Company has committed to sourcing 90% of its workforce from the Municipality and only when skills limitations prohibit this target, will labour be sourced from the wider area of Kardzhali and beyond. As such, within the project context where baseline conditions indicate high unemployment rates, this is considered a significant positive impact.

Increased economic activity in the area may create cost inflation. While this is particularly the case in relation to housing as the demand rises, levels of home ownership are high in the host communities, thus limiting the adverse impact of increased housing costs. Since the mine life is relatively short, and the window of opportunity for the development of new enterprises and self-sustaining businesses to become established within the Local Study Area (LSA) is limited, risks of over-dependency of the local economy on the mine are of concern. It can be assumed that mine closure will result in reduced economic activity, creating unemployment and levels of out-migration similar to those seen today in the area. Skills investment through training of the workforce in industry related skills and work readiness is considered beneficial and cumulative in effect. The Company has developed a robust training plan which will be implemented during the pre-Construction and Construction Phase, in order to meet recruitment milestone targets set for the Operations phase.

Slight changes in the demographic profile of the Municipality will take place, in particular Krumovgrad town. Currently, the general migratory trend is outward, especially amongst the younger generation of working age, and the demographic characteristics of the Municipality and in particular the villages and hamlets surrounding Ada Tepe which formed the sample for the socio economic household survey, indicate largely depopulated communities and a predominantly aged population. However this will reverse moderately and in-migration to the area of direct and indirect workforce candidates and opportunistic job seekers, who will be predominantly male, will take place. Increased population may put some pressure on Municipality utility services, presently functioning at a low capacity. Other social issues may also arise consequent to these demographic changes such as conflict over employment opportunities, although this should be readily mitigated by the commitment by the Project to prioritise local hiring..

The footprint of the project site and its anticipated buffer will take up approximately 134 hectares of National Forestry Department owned land. Further land will be acquired from the Municipality near Pobeda in order to widen the road to the mine site on Ada Tepe in

some places. A discharge pipeline will be constructed alongside the municipal road, which will not disrupt agricultural activities. Before construction, pipeline easement rights for a period of 15 years will be negotiated for four sections of private land totalling 0.1 hectares. On Ada Tepe, there will be a loss of access to the abandoned tourist lodge (owned by the Municipality) and four tourist bungalows, but these will be replaced by the Project. Recreational hunting will be affected, as the assigned hunting territory of the Lulichka hunting group will be reduced in overall size, and the only boar hunting area, which is on Ada Tepe, will be lost. Although seasonal mushroom picking on Ada Tepe will not be possible any more, this activity is performed in various woodlands throughout the Municipality and no permanent loss of access to gathering grounds among host communities has been identified.

It is possible that impacts related to the perceived contamination of cultivated crops such as tobacco, vegetables and bee keeping as well as wild crops such as mushrooms, wild herbs and berries may arise. This perception could affect the community's ability to sell the agricultural products, and this would have significant negative impacts on many community members' livelihoods. The Project's commitment to public information and ongoing stakeholder engagement, including with buyers of local commodities, will contribute to preventing the development or realization of such perceptions. Evidence of any sustained adverse impacts will lead to increased and improved communication about the Project's management of environmental impacts. .

Project activities will put increased pressure on the road infrastructure and increase the amount of traffic travelling on the road in the Municipality and District. The increased traffic movements will be insufficient to cause traffic congestion but there will be an increased risk of road traffic accidents and collisions between project and local vehicles, pedestrians, cyclists and livestock. Adequate road safety management measures will be put in place to prevent this as far as possible.

Potential impacts that could put further pressure on Krumovgrad Hospital (which according to baseline data is functioning at a low capacity) will be mitigated through key mitigation and management measures, which include sourcing the workforce principally from the host communities, investment in health and safety training for the workforce and effective management of traffic, noise and dust impacts.

4.9.3 Mitigation measures – people and communities

Enhancement measures proposed to maximise economic benefit from jobs and expenditure particularly in the local area of the Municipality comprise building capacity of the local supply chain in line with the Company's procurement policy; skill training of work force; and contractor contract clauses encouraging local recruitment and procurement.

To maximize employment opportunities, establishment of a fair, transparent and accessible recruitment procedure which is accessible to all interested parties in a timely manner is proposed. It is intended to establish effective community engagement with stakeholders via the Community Liaison team and the operation of the Company information centre in Krumovgrad as a source of accurate and up-to-date Project

information including recruitment procedures and job opportunities as well as access to the Community grievance mechanism.

Mitigation is proposed to avoid the local economy becoming mono industrialised with the establishment of a Community Development Plan which incorporates agricultural, livestock and bee keeping initiatives that aim to strengthen and diversify present production; assist in linkages between producers and customers; and provide small and medium sized enterprise training.

To enhance the outcome from investment in skills, the timely establishment of a fair and transparent recruitment procedure and skills training is proposed.

Mitigating changes to the demographic profile requires monitoring of demographic flows within the community and partnering with the Municipality to provide assistance to support utility services and protective services. Social cohesion and community safety and security will be maintained by the following actions:

- Development of a Company induction programme and code of conduct for all workers
- To preserve the strong social fabric and sense of place of the Municipality, establishment of social initiatives within the Community Development Plan.

Additional specific actions include the following:

- Establish entitlements as part of the Community Development Plan in line with (or exceeding) EBRD Requirements to cover compensation of the affected private owners whose partial pieces of land will be temporarily limited in land use because of the construction of the discharge pipeline close to their property. Payment of rental for easement access will be made.
- Coordinate with the Municipality over an alternative location for the construction of a tourist lodge and bungalows
- Local hiring priority policies established for the affected communities of Skalak, Zvanarka, Ovchari and Roma populations
- A vulnerable persons mitigation plan established, which identifies the vulnerable groups and individuals in affected communities and targets them for mitigation to offset built-in disadvantages
- Provide financial assistance to Krumovgrad hospital to improve service provision, equipment and infrastructure
- Support the hospital and the health authority in awareness raising campaigns related to communicable diseases.

A social management plan (SMP) will be developed based on the findings of the Social Impact Assessment. The SMP will be supported by other plans already developed such as the Community Health, Safety and Security (CHSS) management plan.

5.0 ENVIRONMENTAL, COMMUNITY AND OCCUPATIONAL HEALTH

5.1 Introduction

Environmental and occupational health matters related to implementation of the Project will be managed by a Community Health, Safety and Security Management Plan. At this stage a Plan Framework has been drafted to address the following commitments by the Company:

- Mitigate potential impacts of Project related activities that may affect the health, safety and security of communities within the Project area and along the transportation route;
- Maintain a healthy workforce and labour pool in the community; and
- Contribute to the improved health and wellbeing of the local community in the Project area.

5.2 Regulatory background on environmental health

Under the agreed Environmental Impact Assessment (EIA) mitigation, a "*cordon sanitaire*" should be maintained between the Project operational areas and neighbouring dwellings and settlements. This buffer zone of 49 hectares takes account of hazards and risk relating (principally) to noise and vibration, emissions to air and chemical pollution. The EIA also takes account of blasting operations and potential for generation of flyrock. A fence will also prevent medium to large animal species (such as tortoises) from entering the project site.

5.3 Environmental health baseline

The environmental health baseline is described in the Social Impact Assessment (see Section 4.8 above). The Project's setting is rural in nature and there are no major industrial enterprises located within the assessment area. The principal issue in regard to environmental pollution relates to surface water quality that is heavily impacted by the lack of sewage treatment facilities generally. Health facilities in the locality are limited and of a very basic standard, but on the other hand, the general health status of local communities compares favourably with the Bulgarian population as a whole.

5.4 Environmental health impacts and management

5.4.1 Noise and vibration

Noise and vibration impacts are discussed in Section 4.2 above; forecast noise levels do not indicate any likelihood of limit exceedance.

5.4.2 Air emissions

Impacts on air quality are summarised in Section 4.2 above and potential for generation of fugitive dust is highlighted. However, it is not likely that dust generation will be at levels that could impact human health, with proposed mitigation measures in place.

5.4.3 Traffic impacts

The Project will give rise to increased volumes of heavy traffic on the public road network. This will affect the safety of other road users, with exposure minimised as far as practicable by appropriate routing away from areas heavily used by domestic traffic. Additional measures employed to ensure acceptably low levels of traffic hazard will include driver training, appropriate signage and safe site entrance points as well as effective vehicle maintenance (required of Company and contractor's vehicles).

5.4.4 Chemical pollution

Potential for pollution is addressed mainly via assessment of impacts on water quality and on soils, as described in Sections 4.3 and 4.4 above. As for most mining projects, potential for impact on water quality comprises the most significant physical environment issue. Great attention has been paid in the Project design to either avoid or mitigate against significant impacts on surface water and groundwater quality and ensure that all emissions from the Project are in line with Bulgarian/EU standards for effluent discharge and protection of the receiving environment.

5.5 Occupational health

In regard to the health and safety of workers, the Company must adhere to Bulgarian regulatory controls on occupational health and safety and will also manage OHS risks in line with good international and EU practice. The issues that are of particular relevance to the Krumovgrad Project are potential impacts on respiratory health arising from generation of dust; noise generated by blasting and mine and processing plant; and use of chemical reagents in the process plant. It is noted that cyanide will not be used in the process.

The Company will employ the hierarchy of worker protection methods, namely avoidance as far as possible of creation of hazards to health and safety; ensuring as far as possible that workers are not exposed to health and safety hazards; and where exposure is unavoidable, ensure that adequate personal protective equipment is issued and used properly through the implementation of an ongoing training programme.

6.0 TRANSBOUNDARY IMPACT ASSESSMENT

The Project is located within 12.5 km (straight line) of the Greek border and the Krumovitsa River is a tributary of the Arda that flows into Greece some 70 km downstream of Krumovgrad. This justified consideration of the potential transboundary impact of the project on the environment and Public health in Northern Greece under the terms of an inter-State Convention. This involved communication between the respective environmental Ministries in Bulgaria and Greece regarding the nature of the Project and the issues involved.

The conclusions drawn from this process were that there is limited potential for environmental impact to arise from the Project and this potential is likely to have only a local area of influence. No transboundary impacts of concern were identified.

7.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLANNING

7.1 Management and Monitoring plans

The impact assessment work described above characterises baseline conditions and forecasts impacts on a wide range of biophysical and human community receptors. The study also identifies the mitigation and monitoring measures that will be adopted to ensure impacts are avoided or minimised. In order that this can actually be achieved a series of key management plans has been drafted:

- Air Quality and Dust Monitoring Plan
- Biodiversity Action Plan
- Community Health, Safety and Security Management Plan
- Emergency Preparedness and Response Plan
- Hazardous Materials Management Plan
- Mine Closure Plan
- Stakeholder Engagement Plan
- Traffic Management Plan.

At this stage, these plans have been developed to “Framework” level to clearly define scope, objectives, regulatory controls, monitoring methods, etc. These framework plans will form the basis for operational plans that will be populated with sufficient detail to guide day-to-day management of the key issue or concern and ascribe responsibility for all actions to named personnel.

The Environmental Monitoring Plan developed as part of the EIA (2010) has been modified to take into account the findings of the above management plans. These plans will be further developed, including the monitoring aspects, and finalized prior to construction.

7.2 Action Plan

An Environmental and Social Action Plan (ESAP) has been drafted to ensure that the EBRD PRs are met during all phases of the Project. These actions will need to be implemented before commencing each specific phase of the Project. This ESAP will support the Company in managing the environmental and social issues and risks identified therein. The ESAP is also aimed at promoting the benefits associated with the Project.

The ESAP sets out key actions placed in context of the EBRD Performance Requirements, the required timetable for implementation and the target or evaluation criteria on which to judge successful delivery.

This ESAP has been developed in close liaison with the EBRD and it will form part of the financing agreement between the EBRD and DPM. DPM will be required to report on the implementation of the actions in this ESAP to the EBRD, and the other lenders if required.

This reporting will initially take place quarterly during construction and annually thereafter for the life of the loan.

This current version of the ESAP is a draft which will be finalised following the mandatory 60 day EBRD disclosure period for Category A projects. The final version of the ESAP will then be disclosed and will reflect stakeholder concerns and feedback received during the disclosure period as necessary.

8.0 EBRD PERFORMANCE REQUIREMENTS COMPLIANCE

The following table summarises compliance of the Krumovgrad ESIA with EBRD's Performance Requirements.

Performance Requirement	Key Objectives	Krumovgrad Gold Project Compliance
PR1: Environmental and Social Appraisal and Management	Identify and assess environmental and social impacts	Environmental and Social Impact Assessment (ESIA) conducted, as described by this non-Technical Summary (all Chapters)
	Adopt measures to avoid, minimize, mitigate or offset adverse impacts	As described for each environmental and social medium/issue in the impact assessment sections above (Chapter 4)
	Identify and adopt opportunities to improve environmental and social performance	The ESIA study results have been fed back into the project design on an iterative basis in order to improve environmental and social performance. Section 3.16 above describes the significant aspects of the Project that justified comprehensive evaluation of options and optimisation to meet performance requirements and community acceptability
	Promote improved environmental and social performance through monitoring and evaluation	Environmental and social management plans drafted (Chapter 7.0)
PR2: Labour and Working Conditions	Establish and maintain a sound worker-management relationship	Required under Bulgarian law and Company's guiding policies (also see Chapter 5.0)
	Promote fair treatment, non-discrimination and equal opportunity of workers	As above
	Promote compliance with relevant collective agreements, national labour and employment laws and fundamental principles and regulatory standards embodied in the ILO conventions	
	Protect and promote the health and safety of workers	
PR3: Pollution Prevention and Abatement	Avoid, or where avoidance is not possible, minimise adverse pollution-related impacts on human health and the environment	Mitigation strategy against pollution of air, water and soils is described in Sections 4.2 to 4.4.
	Exploit opportunities for energy and resource efficiency improvement and waste reduction	Sections 3.4 and 3.16 describe the approach taken for more efficiently managing bulk wastes (waste rock and process tailings). Chapter 8.0 summarises the proposed management of the Project, incorporating efficiency monitoring and waste reduction strategies
	Reduce greenhouse gas emissions	Section 4.2 summarises the position regarding GHG emissions; the Project is characterised as a "medium – low" GHG emitter under EBRDS's guidelines. The most significant source is indirect emission as a result of electric power usage (sourced from the Bulgarian grid), with the largest demand being from the mineral comminution mills.
PR4: Community Health, Safety and Security	Avoid or minimise risks to and impacts on the health and safety of the local community	The approach is summarised in Chapter 5.0, as well as in relevant management plans summarised in Chapter 7.0
	Ensure that the safeguarding of project-related personnel and property is carried out in a legitimate manner	Management of security will conform to Bulgarian law (see Section 3.16).
PR5: Land Acquisition, Involuntary	Avoid or minimise involuntary resettlement	The Project has been specifically designed to avoid need for resettlement and economic displacement. The Project's operational area footprint occupies state-

Performance Requirement	Key Objectives	Krumovgrad Gold Project Compliance
Resettlement and Economic Displacement		owned land given over to forestry (non-indigenous tree plantations). Sections 3.1 and 3.16 refer.
	Mitigate adverse social and economic impacts arising	No significant impacts; a closure plan will establish a productive end-use for the completed site, establishing an indigenous shrub/tree cover on what was state-managed exotic forest plantation (Section 3.15)
	Improve, or as a minimum, restore livelihoods and standards of living of displaced persons to pre-project levels	
	Improve living conditions among displaced persons through provisions of adequate housing with security of tenure	
PR6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Protect and conserve biodiversity	Approach is summarised in Section 4.5
	Avoid, minimise and mitigate impacts on biodiversity and offset significant residual impacts, where appropriate, to achieve no net loss, or a net gain of biodiversity	
	Promote the sustainable management and use of natural resources	
	Ensure that Indigenous Peoples and local communities participate appropriately in decision-making	
	Provide for fair and equitable sharing of the benefits from project development and arising out of the utilisation of genetic resources	
	Strengthen licence to operate, reputation and competitive advantage through best practice management of biodiversity	
	Foster the development of pro-biodiversity business that offer alternative livelihoods in place of unsustainable exploitation of the natural environment	Approach to analysis and management is summarised in Section 4.6
PR7: Indigenous Peoples	No indigenous peoples present in the affected area	
PR8: Cultural Heritage	Support the conservation of cultural heritage	The approach to cultural heritage conservation is summarised in Section 4.8; an ancient mining site is located within the Project footprint and this impact is being actively addressed in liaison with relevant Bulgarian archaeological authorities. Finds from this site will be exhibited in museums and information on hitherto unknown early mining activity disseminated to the Public
	Protect cultural heritage from adverse impacts of project activities	
	Promote the equitable sharing of benefits from the use of cultural heritage	
	Promote the awareness and appreciation of cultural heritage where possible	
PR9: Financial Intermediaries	Not relevant to ESIA	
PR10: Information Disclosure and Stakeholder Engagement	Identify people or communities that could be affected by the project, as well as other interested parties	The Company has devised and implemented a Stakeholder Engagement Plan; Section 4.9 and Chapter 7.0 set out the approach taken as part of the ESIA process and also what is proposed for the management of the construction, operation and closure phases of the Project
	Ensure that such stakeholders are appropriately engaged on environmental and social issues that could potentially affect them through a process of information disclosure and meaningful consultation	
	Maintain a constructive relationship with stakeholders on an ongoing basis through meaningful engagement during project implementation	