Water Monitoring Report for the Ada Tepe Prospect of Khan Krum Deposit 2019

2019 Report

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January 2021

Version 3

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APPENDICES

1. Introductionand description of the monitored site

This report was prepared on the basis of the approved Environmental Monitoring Plan of Dundee Precious Metals Krumovgrad EAD, in compliance with Condition No III.20 of EIA Resolution 18-8,11/2011 issued by the Minister of Environment and Water, which grants an approval of the proposed investment project for "Mining and Processing of Auriferous Ores from the Ada Tepe Prospect, Khan Krum Deposit, Krumovgrad Municipality".

The purpose of this document is to report the analyzed results of the environmental monitoring completed at the local monitoring network, including sampling points for surface and ground water in the Ada Tepe area, Khan Krum deposit.

This document reports the completed monitoring activities related to the implementation of DPMK's project for Mining and Processing of Gold Ore from Ada Tepe prospect, Khan Krum Deposit, Krumovgrad.
The objectives of the 2019 monitoring were:

- To gather and analyze current data to complement the already existing database on water quality prior to commencing construction works at the minesite;
- To provide a database on water quality in the area, to enable a comparison of results prior to the start of construction works and at all subsequent project implementation stages;

The monitoring was conducted at designated sampling points. Results were then used to identify changes in the status of waters in the Ada Tepe area, Khan Krum deposit. Samples were tested by a certified lab.

2. GENERAL

The Water Monitoring Report (the Report) of Dundee Precious Metals Krumovgrad ("DPMK" or "the Company") was drafted in connection with environmental monitoring conducted at Ada Tepe Prospect, Khan Krum Deposit, Krumovgrad Municipality, as part of the Company's obligations provisioned in the 2014 Environmental Monitoring Plan, endorsed by the respective environmental authorities.

This Plan was updated to reflect the 2019 minesite commissioning process.

By Letter Ref. No ПУ-03-14/03.06.2019, the Plovdiv Basin Directorate approved the Plan, including the revised *Surface Water* Section and *Groundwater* Section, on condition that the Company makes additional amendments to the plan and presents information on each monitoring point, namely chemical and quantitative groundwater monitoring. According to the instructions for the revision of the Monitoring Plan regarding the groundwater monitoring points added in late 2019, the Company took samples and will submit the test results to the Basin Directorate along with data sheets maintained for each monitoring point.

3. DESCRIPTION OF THE ECOLOGICAL, CHEMICAL AND QUANTITATIVE CONDITION OF THE WATER BODIES RELEVANT TO THE INVESTMENT PROJECT

In terms of the project area, CoM Resolution № 1106/29.12.2016 endorsed the 2016-2021 River Basin Management Plan (RBMP) for the East-Aegean Region. The RBMP together with the respective National Program for its implementation is the primary water management tool. The characterization of both surface water and groundwater bodies that may be affected by the gold ore mining and processing project or are located in the project area takes into account the data and requirements set out in the 2016-2021 RBMP.

The Company is holder of a Permit #31530328/04.03.2013 for groundwater abstraction using new abstraction facilities - tube well with infiltration lateral, issued by the Director of Basin Directorate for Water Management - East Aegean Region - Plovdiv with a 10-year validity term. The purpose of abstraction is industrial and independent drinking water supply. The water supply source is a Quaternary aquifer, BG3G000000Q010 Interstitial groundwater in the Quaternary deposits - Arda river". Permitted daily average water abstraction rate is Q approx. = 2.2 l/sec, Q max. = 5.0 l/sec, the total permitted annual water volume is 70,000 m3/year, of which - industrial water supply is 63,500 m3/year, and municipal and drinking water supply is 6,500 m3/year. The Company has launched a process to revise the volumes under the water abstraction permit above.

Surface Water Characterization

The minesite is situated in the left portion of the mid-stream watershed of Krumovitsa River, which is a right-bank tributary of Arda River, between the Studen Kladenets and Ivailovgrad water reservoirs.

The river typology of the Arda River basin indicates that the entire watershed of Krumovitsa River - the main watercourse and its tributaries, belongs to a uniform water body.

The larger tributaries of the Krumovitsa River are the Virovitsa (Kessebir) River, the Vetritsa (Elbassandere) River and the Kaldzhikdere River.

The main surface water body which can potentially receive treated wastewater from the mining operation is Krumovitsa River. Krumovitsa springs from the southern border ridge (Maglenik) of the Eastern Rhodopes and flows northwards and north. Its total length is 58.5 km, and its watershed area is 670.8 km^2. At the Krumovgrad gauge station (HMS 61550, which is the only one in the river watershed), the river section is

- 37.3 km long;
- watershed area: 497.6 km2;
- average gradient: 19‰;
- average altitude above sea level: 494 m;
- river network density: 1÷1.5 km/km^2;
- average vegetation cover in the watershed: 35% reaching up to 90-100% in the upper parts and down to zero around Krumovgrad.

The soils, which are mainly cinnamon low saline and sandy and clayey-sandy, stony in

composition, are severely eroded by deforestation, and their water regulation capacity is very poor. This causes rapid runoff from precipitation, which is predominantly rain in this climatic area of Southern Bulgaria.

The river is of the torrential type, with characteristic summer dry-ups in some parts, which categorize it as a Sub-Mediterranean river type (intermittent river), Code R14 (as per the RBMP).

General Characterization of the River Flows of Krumovitsa (as per RBMP) - watershed area 497.6 km2; mean flow quantities 7,320 m3/s, maximum flow quantities 15,100 m3/s, and minimum flow quantities 2,827 m3/s.

There are domestic wastewater treatment plants downstream of Krumovitsa River. A wastewater treatment plant was built in 2019 to treat effluent generated by the Ada Tepe employees. The treated effluent is recycled back to operation. Sediment materials are being extracted downstream from the riverbed. There are no industrial waste sources in place or areas that are identified as impacted by agricultural pollution.

The hydromorphological pressure on the BG3AR200R009 surface water body has been categorizes as "weak" in terms of the dykes; impounded areas - weak pressure; drained areas - n/a; urbanization - n/a; inert materials - weak pressure and migration barriers - insignificant pressure.

According to the 2016-2021 RBMP, the importance of impacts caused by climate changes along the Arda River and its tributaries in terms of the adopted RDC 8.5 scenario for climate changes featuring a gradual increase of greenhouse gases over the years (i.e. the most pessimistic scenario), trend forecasting for river flow changes shall be most prominent in the long-term, namely in 2071-2100. Surface water bodies along the Arda River fall within several areas affected by climate change, as follows:

9 Upper reaches of the Arda River and its tributaries

10 Lower and middle reaches of the Arda River, and lower and middle reaches of its tributaries

The forecast for the uppermost reaches of the Arda River and its upper tributaries is for "average" intensity of climate changes, and "weak" for its middle and lower reaches (and respective tributaries).

The 2071-2100 forecast for climate change impacts on the Krumovitsa River (BG3AR200R009) is indicated as "weak" (see RBMP Appendix 2, sub-section 21).

Table 3-1 Status of Krumovitsa River and its tributaries under the 2016-2021 RBMP[1]

River basin	Water body code	Water body name	Typology	Category	Heavily Modified / Artificial Water Body	Biological indicators	Physical and chemical indicators	Environmental status/ potential	chemical indicators
the Arda River.	BG3AR200R009	Krumovitsa and tributaries	R14	River		good	good	good	Good

There is a significant change compared to previous RBMP data, where the river's environmental status was indicated as "moderate" and its chemical status as "good", thus arriving at a "poor" (moderate) general state of the river.

Groundwater Characterization

Porous and fissure-flow groundwaters dominate the minesite area. Porous groundwaters are typical of the open pit area and along Krumovitsa River and some of its tributaries.

Fissure-flow water

The project footprint partly overlaps the aquifer identified as BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex. It is evident from data presented in Table IV.2.1-8 that this aquifer has the lowest water potential - its modulus is 0.5 L/s.km2. Fissure-flow groundwaters are fed by the storm water, and flow predominantly along the feassures in the metamorphic rocks from Ata Tepe to Krumovitsa river and Kaldzhik gully, which are their main drainage arteries. Sourcing water from this aquifer is limited and usually used to serve local demands only. There are no resources in this aquifer to be used.

The chemical state for 2019 of BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complexwas evaluated as 'good' for 2019, as per the Report on the water volumes state on the territory of the Basin Directorate for water management - East Aegean Region 2019" This Report states that the quantitative state of all groundwater on the territory of this Basin Directorate is 'good' up to 2019. With an exploitation index over 60% (quantitative risk) are 2 groundwater bodies - BG3G00000NQ018 and BG3G00000NQ009.

Interstitial water

The waters accumulated in the Quaternary deposits (aquifer code BG3G000000Q010) of Arda River are of particular interest, as this water body is part of the Krumovitsa river terrace from Ovchari Village to the Arda River.

Water in the alluvial aquifers is recharged by precipitation and fissure flow water along the river valleys, by river floodplains and high water along the rivers. An unconfined

[1] River Basin Management Plan

groundwater flow has been formed in the alluvials, which generally flows in the direction of the hydraulic gradient of the river watershed.

Several water abstraction facilities are in place in the terrace of Krumovitsa, which supply Krumovgrad and some other settlements.

The natural (dynamic) resources in the alluvial deposits in the Krumovitsa watershed are relatively low. Given an average transmissivity of 1500 m2/d, average hydraulic gradient of 0.002 and average floodplain width of 750 m, the dynamic groundwater draw is 26 L/s. Between 60 and 80% of the local abstraction resource comes from Krumovitsa river. Therefore, the EIA Resolution for approval of the Ada Tepe mining operation has set a condition that the Company treats any wastewater to drinking water quality before discharge to Krumovitsa.

According to the 2010-2011 RBMP, the chemical condition of SWB BG3G000000Q010 "Interstitial groundwaters in the Quaternary deposits - Arda River" was assessed as 'good'.

The minesite was commissioned in 2019.

In line with the statutory requirements and in compliance with the conditions under the EIA Resolution 18-8,11/2011, the Company obtaine the following permits:

- Groundwater Abstraction Permit № 31530328 /04.03.2013;
- Water Body Use Permit № 33140188/21.08.2015 for discharge of wastewater into surface water.

The Company has submitted the information required for revision of the permits above for the Operation Phase purposes.

4. LOCATION OF MONITORING POINTS, RESPECTIVELY MONITORING STATIONS, INCLUDING THEIR PURPOSE, LOCATION (INDICATED ON A SUITABLY SCALED MAP), COORDINATES, ALTITUDE, CONSTRUCTION

Water quality assessment in the minesite area was completed by sampling of 18 water points - 10 for surface water and 8 for ground water.

New monitoring points were built in late 2019 to reflect the approved Water Monitoring Plan, and the analyzed results will be provided in the 2020 Report.

The total number of water monitoring points is 27, of which 10 for surface water, 16 for ground water and 1 for wastewater, following treatment at the plant (in cases of waste water treatment). A map of surface and groundwater monitoring points is presented in Appendix 2.

Location details are provided in Table 4-1.1. The table provides description of each individual point, including name, altitude, coordinates, point type (surface, ground or waste

waters), sampling frequency, sampling points' location and purpose as indicated on a suitably scaled map (Appendix 2).

Table 4-1.1: Water monitoring points							
No.	**Name**	**Suspended Solids (m)**	**coordinates : (WGS84)**	**Type**	**of monitored indicators**	**Sampling frequency**	**Location, Description and Objectives**
1	ESW 01	236	E 387727 N 45. 86,770	Surface water	as described in Table 4-1-2	4 times per year	Krumovitsa River – the source point (at confluence of Egrechka River and Kessebirdere). Identifies surface water quality south from the minesite
2	ESW 02	249	E 253913.391 N 412745,461	Surface water	as described in Table 4-1-2	4 times per year	Krumovitsa River before Krumovgrad Indicates surface water quality before the discharge points of the town.
3	ESW 03	233	E 38 69 38 N 45 86 342	Surface water	as described in Table 4-1-2	4 times per year	Kessebirdere - upstream of the confluence with the Egrechka River. Identifies the water quality upstream of the confluence point. Egrechka River
4	ESW 04	235	E 38 76 08 N 45 86 646	Surface water	as described in Table 4-1-2	4 times per year	Egrechka River – upstream of the confluence with Kessebirdere Identifies the water quality upstream of the confluence point.
5	ESW 05	222	E 39 03 67 N 45. 88,680	Surface water	as described in Table 4-1-2	4 times per year	Buyukdere - upstream of the confluence with Krumovitsa River Identifies the water quality of Buyukdere upstream of the confluence with Krumovitsa River.
6	ESW 06	240	E 386225 N 4588202	Surface water	as described in Table 4-1-2	4 times per year	Kaldzhikdere - upstream of the bridge at Pobeda hamlet, Ovchari village. Identifies the water quality in the gully, upstream of the intersection with the access road to the minesite and the section of the gully passing by the minesite.
7	ESW 07	220	E 38 77 91 N 45 89 777	Surface water	as described in Table 4-1-2	4 times per year	Kaldzhikdere - upstream of the confluence with Krumovitsa River Identifies the quality of the stream flowing west of the minesite
8	ESW 08	231	E 388364 N 4587708	Surface water	as described in Table 4-1-2	4 times per year	Krumovitsa river, about 200 m downstream of the North Collection Sump of the IMWF.
9	ESW 09	215	E 386952 N 4592512	Surface water	as described in Table 4-1-2	4 times per year	Krumovitsa River, approximately 100m upstream of the town's untreated wastewater discharge point. Reference levels for point ESW 10. Measures the water quality before discharge of untreated wastewater.
10	ESW 10	215	E 386822 N 4592681	Surface water	as described in Table 4-1-2	4 times per year	Krumovitsa River, approximately 100m upstream the discharge point The purpose is to assess the surface water impact of the untreated waste water of Krumovgrad.

Table 4-1.1: Water monitoring points							
No.	**Name**	**Suspended Solids (m)**	**coordinates : (WGS84)**	**Type**	**of monitored indicators**	**Sampling frequency**	**Location, Description and Objectives**
11	EGW 01	n/a	E 388187.46 N 4589517,6	Ground water	Water level as described in Table 4-1-2	Once per month 4 times per year	The monitoring point is located NE from the site, and covers groundwater running towards the Krumovitsa River from the entire SW sector of Ada Tepe. It is situated in Eocene sandstones and conglomerates. The point monitors the water quality in SWB, code BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.
12	EGW 02	312	E 388103 N 4588506	Ground water	Water level as described in Table 4-1-2	Once per month 4 times per year	Public irrigation well. The point is a well set up E-NE of the open pit at the foot of the slope (in Chobanka hamlet), and represents ground water in Palaeocene breccio-conglomerates and sandstones (Krumovgrad Group), with draining direction E-NE to the Krumovitsa River. The point monitors the water quality in SWB, code BG3G00PtPg2023 BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.
13	EGW 03	312	E 386986 N 4588201	Ground water	Water level as described in Table 4-1-2	Once per month 4 times per year	Geotechnical borehole. The monitoring point is situated in the metamorphic complex (metagranites and granite-gneiss) on the west slope of Ada Tepe and its purpose is to monitor groundwater flowing towards Kardzhikdere from the drainage on the west slope of the deposit. The point monitors the water quality in SWB, code BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.
14	EGW 04	229	E 387596 N 4586825	Ground water	Water level as described in Table 4-1-2	Once per month 4 times per year	Geotechnical borehole. The monitoring point is set up in the metamorphic rocks on the slope descending to the Krumovitsa River terrace and covers groundwater flowing south downstream of the mining waste facility. The point monitors the water quality in SWB, code BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.
15	EGW 05	220	E 387957 N 4591016	Ground water	as described in Table 4-1-2	4 times per year	Shaft well 2 - Krumovgrad drinking water abstraction, located in the in the alluvials of the Krumovitsa River. Identifies any negative changes in the quality of groundwater abstracted for municipal and drinking water supply. The point monitors the water quality in the quaternary aquifer of the water body named BG3G000000Q010 Interstitial groundwaters in the Quaternary deposits.
16	EGW 06	218	E 387590 N 4590649	Ground water	as described in Table 4-1-2	4 times per year	Shaft well 1 of Ovchari-Krumovgrad II drinking water abstraction, located in the alluvials of the Krumovitsa River. Identifies any negative changes in the quality of the groundwater abstracted for drinking. The point monitors the water quality in the quaternary aquifer of the water body named BG3G000000Q010 Interstitial groundwaters in the Quaternary deposits.

Table 4-1.1: Water monitoring points							
No.	**Name**	**Suspended Solids (m)**	**coordinates : (WGS84)**	**Type**	**of monitored indicators**	**Sampling frequency**	**Location, Description and Objectives**
17	EGW 07	230	E 387521 N 4586750	Ground water	as described in Table 4-1-2	under discharge permit (but minimum four times a year)	Shaft-tube well with drainage collector, located in the alluvials of the Krumovitsa River. Identifies any negative changes in the quality of the groundwater abstracted for drinking. The point monitors the water quality in the quaternary aquifer of the water body named BG3G000000Q010 Interstitial groundwaters in the Quaternary deposits.
18	EGW 08	n/a	Design E 387367 N 4587549	Ground water	Water level as described in Table 4-1-2	Once per month 4 times per year	Monitoring drill hole (piezometer), at a high elevation of Ada Tepe, a reference point over the IMWF. Set in a metamorphic complex - metagranites and gneisses, with some schists layers. The groundwater source is fissure-flow type, with draining direction towards Krumovitsa River. The point provides the background characteristics of groundwater which flows towards the IMWF.
19	EGW 09	n/a	Design E 388302 N 4587478	Ground water	Water level as described in Table 4-1-2	Once per month 4 times per year	Monitoring drill hole (piezometer0, at the toe of the north Collection Sump before the Krumovitsa River. Set in a metamorphic complex - metagranites and gneisses, with some schists layers. The groundwater source is porous, with draining direction to the Krumovitsa River. The point monitors the quality of groundwater, which flows past the IMWF.
20	EGW 10	n/a	Design E 388392 N 4587262	Ground water	Water level as described in Table 4-1-2	Once per month 4 times per year	Monitoring drill hole (piezometer at the toe of the southern Collection Sump before the Krumovitsa River. Set in a metamorphic complex - metagranites and gneisses, with some schists layers. The groundwater source is porous, with draining direction to the Krumovitsa River. The point monitors the groundwater quality running to IMWF.
21	EGW 11	325	E 385053 N 4589103	Ground water	as described in Table 4-1-2	4 times per year	Water collection system for the water supply station of Zvanarka village. The captured springs are water bodies, which are not part of the Krumovitsa River terrace. They drain waters in the Paleogene sediments. This point monitors household and drinking water supply quality.
22	EGW 12	220	E 389417 N 4589599	Ground water	as described in Table 4-1-2	4 times per year	Shaft well. Pump station at Guliika village. Located in the alluvial deposits of the Krumovitsa river. The point monitors the quality of water designated for household and drinking water supply.
23	EGW 13		E 387011 N 4588460	Ground water	as described in Table 4-1-2	4 times per year	The monitoring point is set up in the metamorphic rocks NW of the open pit. The point monitors the water quality of Surface Water Body (SWB), code BG3G000PtPg049 - Fissure-flow groundwaters, Eastern Rhodopes complex.

Table 4-1.1: Water monitoring points							
No.	**Name**	**Suspended Solids (m)**	**coordinates: (WGS84)**	**Type**	**of monitored indicators**	**Sampling frequency**	**Location, Description and Objectives**
24	EGW 14		E 387874 N 4587860	Ground water	as described in Table 4-1-2	4 times per year	The point is situated east from the ore stockpile. The point monitors the water quality of Surface Water Body (SWB), code BG3G000PtPg049 - Fissure-flow groundwaters, Eastern Rhodopes complex.
25	EGW 15		E 387360 N 4588393	Ground water	as described in Table 4-1-2	4 times per year	The monitoring point is set up west from the open pit. The point monitors the water quality of Surface Water Body (SWB), code BG3G000PtPg049 - Fissure-flow groundwaters, Eastern Rhodopes complex.
26	EGW 16		E 387355 N 4588170	Ground water	as described in Table 4-1-2	4 times per year	The monitoring point is set up west from the open pit. The point monitors the water quality of Surface Water Body (SWB), code BG3G000PtPg049 - Fissure-flow groundwaters, Eastern Rhodopes complex.
27	EWW 02	n/a	E 253839.570 N 412836.999	Waste water	Qty as indicated in Table 2-2.1. Section "Waters", EMP	Continuous Monthly	Treated water discharge point of the Waste Water Treatment Plant (for mixed waste water types). The purpose of the point is to monitor water quantity and quality before discharge to Krumovitsa River.

* "Seasonal" means:

- Spring – May through June;
- Summer – July through September;
- Fall – October through November;
- Winter – February through March

Table 4-1.2: Surface and groundwater assays (conducted by an accredited laboratory).		
Point #	Assay indicators	**Frequency**
All surface water points	Cu, As, Fe, Mn, Zn, Al, dissolved oxygen, pH, electrical conductivity, N-NH4, N-NO2, N-NO3, total N, P-ortho-PO4, total P, BOD5, Cr (VI), Cr(III), petroleum products, Ni, SO4, Ca, Mg, Cd, Cl, calcium carbonate hardness, Pb, Co, cyanides (free), cyanides (total), chromium (total)*, COD*.	Four times per year, by an accredited laboratory
ESW 08, 09, 10 – groundwater	Apart from the physical and chemical profiles listed above, the monitoring should also cover the following the biological elements for quality: Biotic index for macrozoobenthos ("Methods for monitoring of the biological element macrozoobenthos in rivers (biotic and trophic index"), and IPS index for phytobenthos - flint (diatom) algae ("Methods for monitoring the biological element phytobenthos in rivers (IPS index)") - Order No RD - 412/15.06.2012 of the Minister of Environment and Water.	Once per year, in summertime
EGW 07, after treatment	Pursuant to *Regulation № 9 on Municipal and Drinking Water Quality*. 1. Microbiological indicators under Table A.1 for water, pursuant to art. 6, par. 1, item 1: *E. coli*; enterococci. 2. Table B - chemical indicators: acrylamide, Sb, As, benzene, benzo[a]pyrene, B, bromates, vinyl chloride, 1,2-dichloroethane, epichlorohydrin, Hg, Cd, Cu, Ni, NO_3, NO_2, Pb, pesticides, total pesticides, polycyclic aromatic hydrocarbons, Se, tetrachloroethylene and trichloroethylene, total trihalomethanes, fluorides (F^-), chromium (Cr), cyanides (CN^-). 3. Table C - indicators that indicate: Ph, Al, NH4, taste, conductivity, Fe, Ca, Mg, Mn, odor, turbidity, Na, total C, total hardness, residual free chlorine, permanganate oxidation, sulphates (SO_4), phosphates (PO_4), chlorides (Cl^-), color, Zn, Clostridium perfringens (incl. spores), coliforms, number of colonies (microbe number) at 22 °C. 4. Table D - radiological indicators: tritium, total indicative doze, total alpha-activity, total beta-activity, natural U.	Four times per year, by an accredited laboratory
EGW 7 (Fresh water abstraction well supplying the mine site) after treatment	Pursuant to *Regulation № 9 on Municipal and Drinking Water Quality*. 1. Microbiological indicators under Table A.1 for water, pursuant to art. 6, par. 1, item 1: E. coli; enterococci. 2. Table B - chemical indicators: acrylamide, Sb, As, benzene, benzo[a]pyrene, B, bromates, vinyl chloride, 1,2-dichloroethane, epichlorohydrin, Hg, Cd, Cu, Ni, NO_3, NO_2, Pb, pesticides, total pesticides, polycyclic aromatic hydrocarbons, Se, tetrachloroethylene and	Four times per year, under Regulation 9 on the Municipal and Drinking Water Quality, by an accredited laboratory. One of the four samplings is between 1.08 - 30.09 under the Water

	trichloroethylene, total trihalomethanes, F-, Cr, CN^- 3. Table C - indicators that indicate: Ph, Al, NH4, taste, conductivity, Fe, Ca, Mg, Mn, odor, turbidity, Na, total C, total hardness, residual free chlorine, permanganate oxidation, sulphates (SO_4), phosphates (PO_4), chlorides (Cl^-), color, Zn, Clostridium perfringens (incl. spores), coliforms, number of colonies (microbe number) at 22 °C. 4. Table D - radiological indicators: tritium, total indicative doze, total alpha-activity, total beta-activity, natural U.	Abstraction Permit. Volume of exhausted waters.

** - only for points ESW 09 and 10, plus the analysis indicators in column 2*

Surface and groundwater samples were taken in March, June, September and December 2019, in line with the Monitoring Plan. Samples were taken from current monitoring points, if water was in place. See Appendix 2 for maps of surface and groundwater monitoring points, from which samples were taken in 2019 to examine the water quality.

Those points were selected to enable sufficient data collection for proper monitoring of the background water status in the area around and downstream the Krumovitsa river and its tributaries adjacent to the Ada Tepe minesite. Assay results are presented in Appendix 3 (digital records). Static water level data are provided of measurements taken between 2010 (first measurement) and 2019.

Chemical tests are in place for water-soluble forms of the elements, which are provided on the front page of each test certificate by an accredited laboratory. The samples were tested in compliance with the laboratory's accreditation and ISO 11885:2007 was applied for water-soluble forms of water samples."

5. MONITORING DURATION AND FREQUENCY

Water samples were taken four times in 2019 by a certified laboratory. Water quality results from the monitoring points are shown in Table 4-1.2. Static groundwater levels were measured on a weekly basis. All water quality test results were reviewed against the regulated limits, and are provided in Appendix 3 (in digital format) for better clarity.

Surface water test results were reviewed against the limits of *Regulation № H-4/ 14.09.2012 for Surface Water Characterization* (SG 79 /23.09.2014, effective 23.09.2014) and *Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.*

Results from groundwater tests were reviewed against the groundwater quality standards of *Regulation № 1/10.10.2007 on Groundwater Exploration, Use and Protection*. Appendix 3 provides the results from surface and groundwater monitoring points.

6. MONITORING SYSTEM - OPERATING CONDITIONS

The operation of the monitoring system is related to the operation cycle of the minesite. The open pit and crusher operations are be based on two 8-hour shifts a day, 7 days a week. The

processing of crushed ore is a continuous cycle based on three 8-hour shifts a day, 7 days a week.
The internal monitoring will be conducted simultaneously with the ongoing minesite operations, from approval date of the monitoring plan through completion of all mansite construction, operation and rehabilitation operations.

7. MONITORING DATA ANALYSIS AND REPORT FORMAT

- The Company submits the results of its internal monitoring to the Director of the Basin Directorate, East Aegean Region in compliance with art. 174 of the Waters Act, within the deadlines specified in the respective permits, issued under the Waters Act;
- Internal monitoring data, including description of the Internal Monitoring Plan (monitoring points, parameters and sampling frequency) and related results are published on the Company's website (in Bulgarian and English). A notification letter indicating the web page where the monitoring results are published will be sent to the East Aegean Basin Directorate in Plovdiv, the MoEW and REWI-Haskovo. The Company will also notify the Greek Ministry of Environment, Energy and Climate Change.
- Once per year, by 31st March, the Company sends a Report (in English) on water quality results to the Greek Ministry of Environment, Energy and Climate Change. The report includes a full description of the points from which samples are taken (location, etc.), tested parameters, analytical methods and comparison of these data against the emission limit values. That report, both in English and Bulgarian, will be submitted to the EABD.
- The Company will submit an Annual Internal Water Monitoring Report to the Krumovgrad municipal authorities.

The analysis of water monitoring data includes a comparison between obtained water sample tests the applicable standards to surface, waste and groundwater quality under the by-laws to the Waters Act.

8. NOTIFICATION CRITERIA

The criteria for due notification are:

- upon scheduled suspension of the work of the wastewater treatment facility;
- upon emergency suspension of the work of the wastewater treatment facility;
- when there is an unavoidable need for an emergency discharge of non-treated wastewater;
- upon emergency regarding inevitable surface and groundwater pollution.

In the event of one or more of the above mentioned emergencies endangering surface and groundwater quality, information about the undertaken measures shall be duly sent to:

- Basin Directorate, East Aegean Region;
- REWI - Haskovo;
- Kardzhali Regional Health Inspectorate;
- Krumovgrad Municipality;
- Kardzhali District Governor;
- other authorities defined in the minesite's Emergency response plans.

9. FUNCTIONAL LINES FOR PROVISION OF MONITORING INFORMATION

All water monitoring data and records are kept with DPMK's Environmental Department, including records, databases with assay results, and data sheets.
Annual Monitoring Reports are prepared for each calendar year. Copies of the annual monitoring reports will be available in Bulgarian and in English on the corporate website at http://dundeeprecious.com

10. OTHER REQUIREMENTS REGARDING THE PLAN'S CONTENT

To date, there are no other requirements except those already outlined.

11. Results from the implementation of the Monitoring Plan

Water sampling and chemical tests were conducted four times - in March, June, September and December 2019. Samples were taken from surface waters of Krumovitsa tributaries, as well as from groundwaters, including drinking water abstractions before treatment. The accumulation of data on water quality and quantity will enable a more precise impact assessment of minesite operations in the future.

Assay results of all monitoring points are available in Appendix 3.

Surface waters

The water quality of Ktumovitsa River and its tributaries was tested at 9 points in 2019. Surface waters were tested 4 times in March, June, September and December for indicators listed in Section 4.1. of this Report.

According to Regulation № H-4, river water status falls within four river categories - mountain rivers (R1, R2, R3), semi-mountain rivers (R4, R5) + conditional spring-type rivers(R15), plain rivers (R7, R8, R12, R13), intermittent and Black Sea type of rivers (R9, R10, R11, R14). The Krumovitsa River and its tributaries belong to the intermittent category, Code R14. The environmental assessment of any water body (provided that there are at least 4 values per year, distributed over the 4 seasons) is based on the averaged annual value (AAV).

The following was observed at various surface water monitoring points:

- ESW 01 – Krumovitsa River, first section (the confluence point of Krumovitsa, Egrechka and Kessebirdere) This point is situated 200m south from the minesite and indicates background levels. It presents the condition of waters which flow close to the southern part of the minesite and yet remain off-site and downstream the Krumovitsa River.

No elevated concentrations were observed, based on the physical and chemical indicators of "excellent" quality of intermittent rivers (such as Krumovitsa) and the quality standards for chemical elements and other substances for surface waters produced internally (regulated

limits - environmental quality standards), provisioned by Regulation № H-4/ 14.09.2012 on Surface Water Characterization. No elevated levels were identified under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.
Samples were taken on: 13.03.2019, 12.06.2019, 18.09.2019 and 12.12.2019 (see assay certificates in Appendix 3)

- ESW 02 – Krumovitsa River upstream of Krumovgrad. It shows the water condition before Krumovgrad.

No elevated concentrations were identified based on the physical and chemical indicators of "excellent" quality of intermittent rivers (such as Krumovitsa) and the quality standards for chemical elements and other substances for surface waters produced internally (regulated limits - environmental quality standards), provisioned in Regulation № H-4/ 14.09.2012 on Surface Water Characterization. No elevated levels were identified under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.
The point was selected to monitor components of the upper course of Krumovitsa, upstream of Krumovgrad and is included in the new 2019 Water Monitoring Plan. Therefore, one sample was taken on 12.12.2019 (see test certificates in Appendix 3)

- ESW 03 – Kessebir River downstream of Sinap, upstream of the confluence point with Egrechka River

This point is situated 600m East from Sinap village. Its purpose is to collect data about any pollution in the water catchment area of Kessebir gully.
Three samples were tested in 2019, and no sample was taken in the summer, as the river was dry. The test results show no elevated levels according to Regulation № H-4 /14.09.2012 on Surface Water Characterization. No elevated levels were identified under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.
The condition of the water was 'excellent' in terms of all physical and chemical indicators, save for BOD_5, which was classified as 'good'. The test certificates are provided in Appendix 3.

- ESW 04 – Egrechka River – upstream of the confluence with Kessebirdere

This point is situated 500m south from the process plant. Its purpose is to gather data about any pollution of Egrechka generated in the water catchment area. This is a background monitoring point since it is located above the minesite.
Four water samples were assayed in 2019. The results show no elevated levels according to Regulation № H-4 /14.09.2012 on Surface Water Characterization. The condition of this water body is 'excellent' by physical and chemical indicators. No elevated levels were identified under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants. The test certificates are provided in Appendix 3.

- ESW 05 Buyukdere - upstream of the confluence point Krumovitsa River.

The purpose of this point is to collect information on any Krumovitsa pollution generated by the populated areas situated in the water catchment area of the gully. The Buyukdere River is a right-hand tributary of Krumovitsa River. Two water samples were assayed in 2019. No other samples were taken as the river was dry.

The test results indicate no levels above the limits under Regulation № H-4 /14.09.2012 on surface water characterization. No elevated levels were identified under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants. Samples from this monitoring point were taken on: 13.03.2019 and 12.12.2019.
The condition of the water was 'excellent' in terms of all physical and chemical indicators, save for BOD_5, which was classified as 'good'. The test certificates are provided in Appendix 3.

- ESW 06 Kaldzhikdere - upstream of the bridge at Pobeda hamlet of Ovchari village.

Identifies the water quality in the gully upstream of the intersection with the access road to the minesite and the section of the gully passing by the minesite.
Three samples were tested in 2019 and no sample was taken in the summer, as the river was dry.
The test result indicate no levels above the limits under Regulation № H-4 /14.09.2012 on surface water characterization. The condition of the water was 'excellent' in terms of all tested physical and chemical indicators. No elevated levels were identified under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants. Samples were taken on: 20.03.2017, 30.06.2017 and 6.12.2017. Test certificates are provided in Appendix 3.

- ESW 07 Kaldzhikdere - upstream of the confluence point with Krumovitsa

This monitoring point is situated N-NW, at 300m from the confluence point of Kaldzhikdere and Krumovitsa River. The waters in this gully are directly connected to the flow generated by precipitations in the Ada Tepe area. The purpose of this point is to gather data on Krumovitsa River pollution generated by populated areas situated within the gully's water catchment area and the future minesite.
The point was sampled once throughout the reported period. No other samples were taken, as the river was dry. The test results indicate no levels above the limits under Regulation № H-4 /14.09.2012 on surface water characterization. The water condition was 'excellent' in terms of all tested physical and chemical indicators. No elevated levels were identified under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants. The sample was taken on 13.03.2019. A copy of the test certificate is included in Appendix 3.

- ESW 08 Krumovitsa river, downstream of the north sump of the IMWF.

Three samples were tested in 2019, and no sample was taken in the summer, as the river was dry. The test results indicate no levels above the limits under Regulation № H-4 /14.09.2012 on surface water characterization. The water condition was 'excellent' in terms of physical and chemical indicators. No elevated levels were identified under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants. Samples were taken on: 20.03.2017, 30.06.2017 and 6.12.2017. Test certificates are provided in Appendix 3.

- ESW 09 Krumovitsa River.

The monitoring point is approximately 100m upstream of the discharge point. ESW 09 is a reference point for ESW 10. It indicates Krumovitsa River water quality before discharge downstream of the Company's wastewater treatment facility. No wastewater was treated and discharged into Krumovitsa to date, as no discharge was required.

The point was sampled 4 times in 2029. The test results indicate no levels above the limits under Regulation № H-4 /14.09.2012 on Surface Water Characterization. The condition of the water was 'excellent' in terms of all physical and chemical indicators, save for BOD_5, and total Nitrogen, which was classified as 'good'. No elevated levels were identified under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.

Samples were taken on: 13.03.2019, 12.06.2019, 18.09.2019 and 12.12.2019. The test certificates are included in Appendix 3.

- ESW 10 Krumovitsa River, downstream of the mine waste water discharge point.

This monitoring point is located on the Krumovitsa River, approximately 100m downstream of the discharge point The aim is to facilitate the impact assessment of any treated water discharge. By 2014, the name of this monitoring point was 02. The point was sampled four times during the reporting period.

No wastewater was treated and discharged into Krumovitsa to date, as no discharge was required.

The test results indicate no levels above the limits under Regulation № H-4 /14.09.2012 on Surface Water Characterization. The condition of the water was 'excellent' in terms of all tested physical and chemical indicators, save for BOD_5, and total Nitrogen, which were classified as 'good'. No elevated levels were identified under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants. Samples were taken on 20.03.2017, 30.06.2017 and 6.12.2017. Test certificates are provided in Appendix 3.

Groundwater

Monitoring conducted at these points enables the company to track changes in static water levels and chemical composition of groundwaters. The collected data will be used for comparative purposes, as part of future assessments on the indirect impact of the Ada Tepe mining operations on local groundwaters.

Groundwater samples were taken according to the monitoring schedule, with some exceptions. Other monitoring points, namely EGW 01, 08, 09 and 10 are not built yet.

The accumulation of data on the static groundwater levels continued in 2019 and the data are provided in Appendix 3, together with a brief analysis on their dynamics. The regular monitoring activities at these stations enables tracking of the dynamics of the groundwater flow and chemical composition. Collected data will be used for comparative purposes as part of future assessments of the indirect impact of the Ada Tepe mining operations on local groundwaters. Variances in the static water levels are driven by the recharge conditions and seasonal climate conditions. Our analysis shows that there is no direct link between water

levels measured by various piesometers. However, all of them are directly affected/ recharged by precipitation.

Points and analyzed groundwater points are as follows:

- Borehole EGW 01. It is located NE from the minesite and covers fissured groundwaters running towards the Krumovitsa River from the entire NE sector of Ada Tepe. It is situated in Eocene sandstones and conglomerates. The point monitors the water quality of Surface Water Body (SWB), code BG3G00PtPg2023 - Fissure-flow groundwaters, Krumovgrad-Kirkovo zone.

This monitoring point was not tested, as it was drilled in late 2019.

- Point EGW 02 comprises a well set up E-NE from the open pit, at the foot of the slope (in Chobanka hamlet), and represents ground water in Palaeocene breccio-conglomerates and sandstones (Krumovgrad Group), with draining direction E-NE to the Krumovitsa River. The point monitors the water quality in SWB, code BG3G00PtPg2023 - Fissure-flow groundwaters, Krumovgrad-Kirkovo zone.

The assays show no levels above the regulated limits. All assayed indicators meet the quality standards of Regulation 1/2010 on Groundwater Exploration, Use and Protection. Samples were taken on 13.03.2019, 12.06.2019, 18.09.2019 and 12.12.2019.

- Borehole EGW 03 is situated in the metamorphic complex (metagranites and granite-gneiss) on the west slope of Ada Tepe and its purpose is to monitor groundwater flowing towards Kardzhikdere from the western slope of the deposit. The point monitors the water quality in Surface Water Body (SWB), code BG3G00PtPg2023 - Fissure-flow groundwaters, Krumovgrad-Kirkovo zone.

The chemical tests of the samples taken in 2019 shows that the water at this point is compliant with Regulation 1/2010 on Groundwater Exploration, Use and Protection.

Table: 12-1 Monitoring point EGW03. Dynamics and deviations by indicator and date, with relation to water levels in 2019

Indicator	Quality standard under Regulation № 1/2010	Assay by an accredited laboratory, conducted on 07.03.2019, at 7.67 m* groundwater level	Assay by an accredited laboratory, conducted on 14.06.2019, at 2.2 m* groundwater level	Assay by an accredited laboratory, conducted on 06.12.2019, at 0.91 m* groundwater level
Manganese (Mn)	50 µg/l	235 µg/l	94 µg/l	99 µg/l
Iron (Fe)	200 µg/l	252 µg/l	48 µg/l	112 µg/l
Petroleum products	50 µg/l	169 µg/l	4,086 µg/l	39 µg/l

**water level based on the closest measurement by date*

Table: 12 12-1 Monitoring point EGW03. Dynamics and deviations by indicator and date, with relation to water levels in 2018

Indicator	Quality standard under Regulation No 1/2010	Assay by an accredited laboratory, conducted on 14.03.2018 at 5.36m* groundwater level	Assay by an accredited laboratory, conducted on 14.06.2018, at 2.2 m* groundwater level	Assay by an accredited laboratory, conducted on 11.09.2018, at 6.94 m* groundwater level	Assay by an accredited laboratory, conducted on 04.12.2018, at 7.17m* groundwater level
Manganese (Mn)	50 µg/l	10 µg/l	4 µg/l	351 µg/l	111 µg/l
Iron (Fe)	200 µg/l	10 µg/l	60 µg/l	949 µg/l	300 µg/l
Petroleum products	(50 µg/l)	<20 µg/l	40 µg/l	2,659 µg/l	334 µg/l

Table: 12 12-1 Monitoring point EGW03. Dynamics and deviations by indicator and date, with relation to water levels in 2017

Indicator	Quality standard under Regulation No 1/2010	Assay by an accredited laboratory, conducted on 07.03.2017, groundwater level of 7.67 m.*	Assay by an accredited laboratory, conducted on 14.06.2017, at 7.33m* groundwater level	Assay by an accredited laboratory, conducted on 25.10.2017, at 7.75m* groundwater level	Assay by an accredited laboratory, conducted on 06.12.2017, at 7.43m* groundwater level
Manganese (Mn)	50 µg/l	150 µg/l	303 µg/l	315 µg/l	198 µg/l
Iron (Fe)	200 µg/l	530 µg/l	176 µg/l	1320 µg/l	155 µg/l
Arsenic (As)	10 µg/l	40 µg/l	9.1 µg/l	46 µg/l	<5 µg/l
Petroleum products	(50 µg/l)	149 µg/l	<20 µg/l	<20 µg/l	628 µg/l

Table: 12 12-3 Monitoring point EGW03. Dynamics and deviations by indicator and date, with relation to water levels in 2016

Indicator	Quality standard under Regulation No 1/2010	Assay by an accredited laboratory, conducted on 14.03.2016, at 5.55 m* groundwater level	Assay by an accredited laboratory, conducted on 28.06.2016, at 5.99 m* groundwater level	Assay by an accredited laboratory, conducted on 04.10.2016, at 7.01m* groundwater level	Assay by an accredited laboratory, conducted on 06.12.2016, at 7.58 m* groundwater level
Manganese (Mn)	50 µg/l	50 µg/l	105 µg/l	200 µg/l	261 µg/l
Iron (Fe)	200 µg/l	4.7 µg/l	12 µg/l	250 µg/l	2050 µg/l
Arsenic (As)	10 µg/l	<5	<5	<5	53 µg/l

Table: 12 12-4 Monitoring point EGW03. Dynamics and deviations by indicator and date, with relation to water levels in 2015

Indicator	Quality standard under Regulation No 1/2010	Assay by an accredited laboratory, conducted on 29.05.2015	Assay by an accredited laboratory, conducted on 18.08.2015	Assay by an accredited laboratory, conducted on 09.12.2015
Manganese (Mn)	50 µg/l	230 µg/l	510 µg/l	101 µg/l
Iron (Fe)	200 µg/l	51 µg/l	3320 µg/l	150 µg/l
Arsenic (As)	10 µg/l	<5	41 µg/l	8.5 µg/l

The monitoring point was in poor condition, and a new one was built in late 2019. The monitoring results will be provided in the 2020 Report.

The levels of some elements as Fe, Mn and As are expected to be naturally higher due to the fissure-flow type of the local groundwaters. Also, the upper part of the metamorphic complex is naturally dominated by manganese and iron hydroxides. The higher arsenic levels may be explained by the pyritized carbon lenses in this complex, along with the subsequent oxidation processes, which may increase the microelements of the pyrite association. Elevated levels of those elements have been frequently observed as part of the long-term groundwater monitoring at various points. The monitoring results above include values from previous years where no local construction and mining operations took place.

- Borehole EGW 04 is set up in the metamorphic rocks on the slope descending to the Krumovitsa River terrace and covers groundwater flowing south, downstream of the mining waste facility. The point monitors the water quality of Surface Water Body (SWB), code BG3G00PtPg2023 - Fissure-flow groundwaters, Krumovgrad-Kirkovo zone.

The chemical analysis shows that the tested indicators meet the quality standards of Regulation 1/2010 on Groundwater Exploration, Use and Protection, save for Manganese, which is above the regulated limit.

In 2019, this monitoring point was compromised by a dented casing pipe, which made the sampling by an accredited laboratory impossible. The point was recovered in December 2019.

- EGW 05, Krumovgrad Drinking Water Pump Station, situated in the alluvial sediments of Krumovitsa. Identifies any negative changes in the drinking quality before treatment. The point monitors the water quality in the quaternary aquifer of the water body named BG3G000000Q010 Interstitial groundwaters in the Quaternary deposits.

The chemical analysis shows that the tested indicators meet the quality standards of Regulation 1/2010 on Groundwater Exploration, Use and Protection.
In 2019, no values above the regulated limits were identified under the provisions of Regulation 1/2010 on Groundwater Exploration, Use and Protection, save for one indicator, namely the permanganate index.

- EGW 06 Ovchari-Krumovgrad II drinking water abstraction, located in the alluvial sediments of the Krumovitsa River. Identifies any negative changes in the drinking water quality before treatment. The point monitors the water quality in the quaternary aquifer of the water body named BG3G000000Q010 Interstitial groundwaters in the Quaternary deposits - Arda River.

The chemical analysis shows that the tested indicators meet the quality standards of Regulation 1/2010 on Groundwater Exploration, Use and Protection.

- EGW 07 Abstraction well for minesite water supply, located in the alluvials of the Krumovitsa River. Identifies any negative changes in the drinking water quality before treatment. The point monitors the water quality in the quaternary aquifer of the water body named BG3G000000Q010 Interstitial groundwaters in the Quaternary deposits.

The chemical analyses show that the tested indicators meet the quality standards of Regulation 1/2010 on Groundwater Exploration, Use and Protection.
A water supply chlorination system was introduced in 2019. The Company will move the monitoring point to a location after treatment, and the water will be tested according to Regulation 9/16.03.12001 on the Municipal and Drinking Water Quality.
The microbiological analysis shows that the tested indicators are compliant with Regulation 9/16.03.12001 on the Municipal and Drinking Water Quality.

- EGW 08 was built in late 2019 in the Ada Tepe area - it is located at high elevation on Ada Tepe and is a reference point above the IMWF. It is set in a metamorphic complex - metagranites and gneisses, with some schist layers. The groundwater is fissure-flow type, with draining direction to Krumovitsa. This point provides the background characteristics of the groundwater flow towards the IMWF.

- EGW 09 was built in late 2019. At the toe of the northern part of IMWF, between the North Collection Sump and the Krumovitsa River. Set in a metamorphic complex - metagranites and gneisses, with some schist layers. The groundwater source is fissure-flow type, with draining direction to the Krumovitsa River. The point monitors the quality of the groundwater flow past the IMWF.
- EGW 10 was built in late 2019. At the toe of the southern part of the IMWF, between the Southern Sump and the Krumovitsa River. Set in a metamorphic complex - metagranites and gneisses, with some schist layers. The groundwater source is fissure-flow type, with draining direction to the Krumovitsa River. The point monitors the quality of the groundwater flow past the IMWF.

Points EGW 08, 09, 10 were sampled in late 2019 and early 2020. They will be included in data sheets and will be reported to the Aegean Basin Directorate (Plovdiv).

- EGW 11 - Zvanarka drinking water abstraction. These captured springs are not part of the Krumovitsa River terrace. They drain waters in the Paleogene sediments. The point monitors the quality of water designated for household and drinking water supply before treatment.

Water samples from the pump station (EGW 11) show that the ion concentrations are compliant with Regulation 1/2010 on Groundwater Exploration, Use and Protection.

- EGW 12 - abstraction facility at Guliika pump station. Located in the alluvial deposits of the Krumovitsa river. The point monitors the quality of water designated for household and drinking water supply before treatment.

The chemical tests of the samples taken from the water abstraction at point EGW 12 show that the water condition at this point is compliant with Regulation 1/2010 on Groundwater Exploration, Use and Protection.

12. EFFICIENCY ASSESSMENT OF THE 2019 MONITORING NETWORK

Efficiency

The site monitoring design provides an overview of the status and changes in the hydrodynamic and hydro-chemical conditions of surface and groundwaters at the minesite area. The analysis of the monitoring data brings to the following conclusions about the efficiency of the monitoring network used in 2019:

- The location of the monitoring points enables the assessment of current water status by providing the option for comparison against an potential future contamination of surface and groundwaters as a result of DPM operations on the basis of hydro-geological and hydro-chemical conditions close to the footprint of the future mine that represent the various types of groundwaters, which by one way or another are geologically connected to the ore body of Ada Tepe and the layers beneath it;
- Points EGW 01, EGW 08, EGW 09, EGW 10 were built in late 2019 and will be included in the 2020 Monitoring Plan.
- In addition the physical and chemical surface water indicators, the following biological indicators will also be monitored at ESW 08, ESW 09 and ESW 10: Biotic index for macrozoobenthos ("Methods for monitoring the biological element macrozoobenthos in rivers (biotic and trophic index"), and IPS index for phytobenthos - flint (diatom) algae ("Methods for monitoring the biological element phytobenthos in rivers (IPS index)"). Certain tests were completed in 2019 and are included in this Report.
- The Company continue the monitoring of piesometer data on static water levels on a monthly basis.
- Based on the 2018 assessment of the Ada Tepe groundwater monitoring infrastructure completed by JessE EOOD, the Company revised and approved its internal Surface and Groundwater Monitoring Plan.

13. CONCLUSION

After summarizing the results of the tests conducted in 2019 and comparing them against the quality standards of Regulation No H-4/ 14.09.2012 on Surface Water Characterization (issued by the Minister of Environment and Water, SG 22 /5.03.2013, effective 5.03.2013) and the priority substances under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants, and Regulation 1/2010 on Groundwater Exploration, Use and Protection, we can make the following conclusions:

Surface waters:

Krumovitsa river (upstream, before the town of Krumovgrad) The test results show “excellent” condition, in compliance with Regulation No H-4/ 14.09.2012 on Surface Water Characterization. The test results show compliance with the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants, according to the results of monitoring points ESW 01 and ESW02

Krumovitsa river (downstream, 100 m before and after the discharge point of untreated domestic wastewater from the town of Krumovgrad) The test results show “excellent” condition and “good” condition according BOD5, Total Nitrogen, Amonium Nitrogen compliance with Regulation No H-4/ 14.09.2012 on Surface Water Characterization. The test results show compliance with the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants, according to the results of monitoring points ESW 09 and ESW 10.

Groundwaters:

The quality of the groundwaters at the monitoring points is related to the mineralogy of the specific layers penetrated by each drillhole, and the ground layers the monitored water flows through. As evident from the information presented in this Report, there are elevated concentrations of certain metals, which may be simultaneously caused by the local mineralogy, corroded piesometer casing or drillhole contamination from the drilling process. Elevated ion levels were most frequently identified of iron (Fe), manganese (Mn), sometimes arsenic (As) and oil products. Such levels above the regulated limits have often been identified over the years of groundwater monitoring on the site, including years where the Company had no construction works or mining operations on the site.

The levels of some elements as Fe, Mn, Cu, Al, and As are expected to be naturally higher due to the fissure-flow type of the local groundwaters. Also, the upper part of the metamorphic complex is naturally dominated by manganese and iron hydroxides. The higher arsenic levels may be explained by the pyritized carbon lenses in this complex, along with the subsequent oxidation processes, which may increase the microelements of the pyrite association.

New monitoring points were built at Ada Tepe in late 2019 to monitor the chemical status of local groundwater, as part of the approved Water Monitoring Plan of the Company. Data Sheets of all new groundwater monitoring points were delivered to the East Aegean Basin Directorate (Plovdiv) by letter Ref. No 0124/05.05.2020.

The monitored municipal and drinking water was compliant with Regulation 1/2010 on Groundwater Exploration, Use and Protection.