Water Monitoring Report for the Ada Tepe Prospect of Khan Krum Deposit 2020

2020 Report

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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 activity of DPMK's Mining and Processing of Gold Ore from Ada Tepe prospect, Khan Krum Deposit, Krumovgrad.
The objective of the 2020 monitoring were:

- To gather and analyze current data to complement the already existing database on water quality 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 submited the test results to the Basin Directorate along with data sheets maintained for each monitoring point.

All conditions according letter ex. № PU-03-14 / 03.06.2019 have been implemented and necessary documents were submitted to the competent authority.

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 findings and measures.

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 is in process of changing Permit № 31530328 / 04.03.2013 for groundwater use for industrial water supply and independent drinking - domestic water supply from shaft-pipe well. The purpose of the requested change is due to the increase of the annual water quantities and in connection with the commissioning of the site and improvement of the production site, maintenance of already rehabilitated land and after care activities, as well as the need to irrigate roads and sites due to which is necessary to increase the annual water quantities. Another change is needed to include another purpose of water use - for other purposes.

During the period 01.01.2020 .- 31.12.2020 the following annual water quantity was consumed:

- for independent drinking water supply is 6 477 m3 m3 / according to the readings of the electronic water meter № D1T 500045 on 01.01.2020 - 3598 m3 and on 16.07.2020 - 5920 m3; after removal for calibration an electronic water meter № D1T 500046 was installed on 16.07.2020 - 171611 m3m3 and on 31.12.2020 - 175766 m3 /, at a permitted annual volume with a permit of 6500 m3cb.m / year. and
- for industrial water supply 133513 m3 / m3 / according to the readings of the electronic water meter № D1T 500046 on 01.01.2020 - 104882 m3 and on 02.06.2020 - 169306 m3; after removal for calibration an electronic water meter № D1T 500047 was installed on 02.06.2020 - 48 m3 and on 31.12.2020 - 69137 m3 /, with a permitted annual water volume with a permit of 63,500 m3. m / year
- The company has been submitted to BDIBR with № RR-02-25 / 03.02.2020 necessary documents for a procedure for change of permitted 70,000 m3., to the newly applied 152 250 m3/ year quantities in the above mentioned permit.

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 (only in case of need) 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 2020 of BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complexwas evaluated as bad – for indicators with detected deviation are ammonium ions, manganese and total alpha activity according the Report on the water volumes state on the territory of the Basin Directorate for water management - East Aegean Region 2020" This Report states that the quantitative state of all groundwater on the territory of this Basin Directorate is 'good'. 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.

[1] River Basin Management Plan

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 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 for project phase
- Application №PP-07-40 / 30.10.2019 for discharge of treated wastewater for a site in operation.

General description of wastewater

The water management of the Ada Tepe mining operation, Krumovgrad, is carried out according to the adopted sustainable approach“ zero discharge.

However, there is a possibility for the treatment of excess water that could apear to the site for different reasons.

An Emergency High Water Reservoir (EHWR) or the so-called (DRW) drainage and rainwater reservoir has been built, which is able to absorb the short-term imbalances in the circulating water supply cycle caused by events such as periods of intense rain.

EHWR takes overflow water from the main Reservoir for Circulating Water Supply (RCW) or the so-called RTW process water tank. A pumping station has been built, returning the water back from the EHWR to the RCW.

The second line of protection is the installation of three evaporators to reduce the water levels in the EHWR in suitable weather conditions. Each evaporator consists of a fan system and a self-priming pump operating under high pressure. The evaporators suck water from the EHWR and create a fine spray / fogging / of the water above the tank in order to support the evaporation. If the water levels in the EHWR continue to rise, the water diverts from the pipeline from the PF in the direction of the Wastewater Treatment Plant, which is located northwest of the tailings thickener site (waste from the enrichment).

The purpose of the construction of this facility is to meet the requirements of condition I.4.2 of the EIA Decision 18-8,11 / 2011 by purifying the water to chemical indicators

reaching drinking water quality. These treated waters can be discharged through a pipeline in the Krumovitsa River, below the town of Krumovgrad, which fulfills the requirement of condition I.4.3 of the above-mentioned EIA Decision.

The WWTP is a third line of protection in the event of an excess water event in the plant's water supply cycle, and as such will operate in an intermittent mode based on specific needs.

Achieving the required free volume in the EHWR determines the need to put the WWTP into operation.

In 2020, no treated wastewater was discharged into the Krumovitsa River due to the negative water balance of the site. Accordingly, no water samples were taken from the outlet of the treatment plant and it was not in operation002E

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 26 water points - 10 for surface water and 16 for ground water.

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	Once per month	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.
					as described in Table 4-1-2	4 times per year	
12	EGW 02	312	E 388103 N 4588506	Ground water	Water level	Once per month	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 BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.
					as described in Table 4-1-2	4 times per year	
13	EGW 03	312	E 386986 N 4588201	Ground water	Water level	Once per month	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.
					as described in Table 4-1-2	4 times per year	
14	EGW 04	229	E 387596 N 4586825	Ground water	Water level	Once per month	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.
					as described in Table 4-1-2	4 times per year	
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	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	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	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 (in case of realized discharge)	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 Abstraction Permit.

	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.	Volume of exhausted waters.

Surface and groundwater samples were taken in February, June, September and December 2020, 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 2020 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 for 2020.

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."
Samples for the Biotic Index for Macrozoobenthos and the IPS Index for Phytobenthos-Silicon (Diatoms) were performed in July 2020.

5. MONITORING DURATION AND FREQUENCY

Water samples were taken four times in 2020 by a certified laboratory. Water quality results from the monitoring points are shown in Table 4-1.2. Dry monitoring points were recorded in a sampling report. 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 13 /16.02.2021, effective 16.02.2021) 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 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 were conducted simultaneously with the ongoing minesite operations, from approval date of the monitoring plan through completion of all mansiteoperation and rehabilitation operations.

7. MONITORING DATA ANALYSIS AND REPORT FORMAT

- The Company submits on annual basis until March, 31 the results of its internal monitoring to the Director of the Basin Directorate, East Aegean Region and REWI-Haskovo 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).
- 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 submited Water Monitoring data 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 after confirmation by the competent authorities are 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 February, June, September and December 2020. 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 10 points in 2020. Surface waters were tested 4 times in February, 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:

- MP 1 (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. Elevated single exceedances of Aluminium were observed in two of the samples 64 µg/l and 44 µg/l, respectively, at a limit of 25 µg/l according the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.
Samples were taken on: 27.02.2020, 18.06.2020 г., 25.09.2020 г., 10.12.2020 (see assay certificates in Appendix 3)

- MP 2 (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. Elevated single exceedances of Aluminium were observed in two of the samples 65 µg/l and 126 µg/l, respectively, at a limit of 25 µg/l according 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.
Samples were taken on: 27.1202.2020, 18.06.2020, and 10.12.2020. On 23.09.2020 the point was without water supply and for this reason a fourth sample was not taken. (see assay certificates in Appendix 3)

- MP 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 2020, 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. Elevated single exceedances of Aluminium were observed in the one sample 68 µg/l, respectively at a limit of 25 µg/l according 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.

- MP 4 (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 2020. Elevated single exceedances of Aluminium were observed in two of the samples 124 µg/l and 36 µg/l, respectively, at a limit of 25 µg/l and single exceedances or Iron, 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.

- MP 5 (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. No water samples were assayed in 2020 due to the river was dry.

- MP 6 (ESW 06) – Kaldzhik dere - 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 one exceedances of Aluminium levels above the limits according 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: 27.02.2020 г., 18.06.2020 г. и 10.12.2020 Test certificates are provided in Appendix 3.

- MP (ESW 07) - Kaldzhik dere - 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.
No samples were taken, due to the river was dry.

- MP 8 (ESW 08) - Krumovitsa river, downstream of the north sump of the IMWF.

Three samples were tested in 2020, and no sample was taken in the summer, as the river was dry. The test results indicate one exceedances of Aluminium 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: 27.02.2020 г., 18.06.2020 г.,. и 10.12.2020. Test certificates are provided in Appendix 3.
In July 2020, the Company assigned to the Executive Environment Agency - Smolyan Regional Laboratory to conduct sampling and analysis of BEC MZB and phytobenthos (FB). The results show a good state of the IPS index and a moderate state of the biotic index.

- MP 9 (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 of the Company into Krumovitsa to date, as no discharge was required due to the negative water balance.

The point was sampled 4 times in 2020. The test results indicate one exceedance of Aluminium levels above the limits according 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.
In July 2020, the Company assigned to the Executive Environment Agency - Smolyan Regional Laboratory to conduct sampling and analysis of BEC MZB and phytobenthos (FB). The results show a good state of the IPS index and a moderate state of the biotic index.

Samples were taken on: 27.02.2020 г., 18.06.2020 г., 25.09.2020 г. и 16.12.2020. The test certificates are included in Appendix 3.

- MP 10 (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.

For the reporting period are not discharged treated wastewater from the Company's operations in Krumovitsa as such need has not arisen due to a negative water balance..

The test results indicate one exceedance of Aluminium levels above the limits according Regulation № Н-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 27.032.2020 г., 128.06.2020 г., 18.09.2020 г. 12.12.2020.
In July 2020, the Company assigned to the Executive Environment Agency - Smolyan Regional Laboratory to conduct sampling and analysis of BEC MZB and phytobenthos (FB). The results show a good state of the IPS index and a moderate state of the biotic index.
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 assessments on the indirect impact of the Ada Tepe mining operations on local groundwaters.

Groundwater samples were taken according to the monitoring schedule,

The accumulation of data on the static groundwater levels continued in 2020 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 MP 11 (EGW 01) - newly built at the end of 2019. 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 BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex..

The chemical analysis of the samples taken in 2020 shows several deviations from the quality standard according to Ordinance №1 / 2010 for research, use and protection of groundwater:

Dynamics and deviations by indicators and dates and relative to water levels in 2020Parameter	Quality standard according to Ordinance №1 / 2010 for research, use and protection of groundwater	Assay by an accredited laboratory, conducted on 28.02.2020 Water level 2,62 м.*	Assay by an accredited laboratory, conducted on 18.06.2020 Water level 2,67 м.*	Assay by an accredited laboratory, conducted on 01.10.2020 Water level 4,19 м.*	Assay by an accredited laboratory, conducted on 16.12.2020 Water level 3,11 м.*
Permanganate oxidizability	5 mgO_2/l	12.3 ± 1.2	3.7 ± 0.4	40.3 ± 2.3	5.8 ± 0.6
Na	200 mg/l	353 ± 21	347 ± 21	349 ± 21	95 ± 6
Amonium	0,5 mg/l	1.42 ± 0.07	2.8 ± 0.1	2.3 ± 0.2	0.93 ± 0.06
Al	200 µg/l	285 ± 29	57 ± 6	281 ± 28	56 ± 6
An	5,0 µg/l	<2.0	<1.0	33 ± 3	<1.0
As	10 µg/l	<5.0	53 ± 5	114 ± 11	<3.0
Fe	200 µg/l	841 ± 84	580 ± 58	6571 ± 328	1065 ± 53
Mn	50 µg/l	325 ± 33	140 ± 14	502 ± 50	500 ± 50
Ni	20 µg/l	<2.0	<2.0	141 ± 14	27 ± 3
Nitrites	0,5 mg/l	<0.05	<0.05	<0.05	0.89 ± 0.04
Oil products	50 µg/l	<20	59 ± 6	71 ± 7	<20

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

- Point MP 12 (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 BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex..

The assays show one exceedance of Manganese levels above the regulated limits. All other assayed indicators meet the quality standards of Regulation 1/2010 on Groundwater Exploration, Use and Protection. Samples were taken on 28.02.2020 г. 18.06.2020 г., 25.09.2020 г. и 121.12.2020.

- Borehole MP 13 (EGW 03) - newly built at the end of 2019 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 BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.. Newly built at the end of 2019.

The chemical tests of the samples taken in 2020 shows some exceedance with Regulation 1/2010 on Groundwater Exploration, Use and Protection.
Below are presented dynamics and deviations by indicators and dates and by water levels, when sampling was performed by an old borehole used for groundwater monitoring, located in close proximity to the newly built point

Dynamics and deviations by indicator and date, with relation to water levels in 2020

Indicator	Quality standard under Regulation № 1/2010	Assay by an accredited laboratory, conducted on 28.02.2020 water level 2,42 м.*	Assay by an accredited laboratory, conducted on 18.06.2020 water level 2,33 м.*	Assay by an accredited laboratory, conducted on 01.10.2020 water level 2,15 м.*	Assay by an accredited laboratory, conducted on 10.12.2020 при water level 2,13 м.*
Manganese (Mn)	50 µg/l	196 ± 20	110 ± 11	221 ± 22	211 ± 21
Petroleum products	50 µg/l	858 ± 26	161 ± 16	<20	74 ± 7

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

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

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

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

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

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 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 MP 14 (EGW 04) - newly built at the end of 2019 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 BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.

Parameter	Quality standard under Regulation No 1/2010	Assay by an accredited laboratory, conducted on 28.02.2020 при water level 3,98 м.*	Assay by an accredited laboratory, conducted on 18.06.2020 при water level 4,07 м.*	Assay by an accredited laboratory, conducted on 01.10.2020 при water level 4,33 м.*	Assay by an accredited laboratory, conducted on 10.12.2020 при water level 4,47 м.*
Mn)	50 µg/l	38 ± 4	17 ± 2	82 ± 8	148 ± 15
Oil products	50 µg/l	31 ± 3	60 ± 6	<20	74 ± 7

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 and oil products which is above the regulated limit.

The point was recovered in December 2019.

- MP 15 (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 2020, no values above the regulated limits were identified under the provisions of Regulation 1/2010 on Groundwater Exploration, Use and Protection,

- MP 16 (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.

- MP 17 (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. In 2020 The results after treatment, 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.

- MP 18 (EGW 08) newly built at the end of 2019in 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.

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.

Parameter	Quality standard under Regulation No 1/2010	Assay by an accredited laboratory, conducted on 28.02.2020 при water level 20,93 м.*	Assay by an accredited laboratory, conducted on 18.06.2020 при water level 19,32 м.*	Assay by an accredited laboratory, conducted on 01.10.2020 при water level 20,98м.*	Assay by an accredited laboratory, conducted on 10.12.2020 при water level 21,83 м.*
(Mn)	50 µg/l	111 ± 11	23 ± 2	85 ± 9	50 ± 5

- MP 19 (EGW 09) newly built at the end of 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.

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.

Parameter	Quality standard under Regulation No 1/2010	Assay by an accredited laboratory, conducted on 28.02.2020 water level 8,78 м.*	Assay by an accredited laboratory, conducted on 18.06.2020 water level 10,5 м.*	Assay by an accredited laboratory, conducted on 01.10.2020 water level 10,52 м.*	Assay by an accredited laboratory, conducted on 10.12.2020 water level 10,37 м.*
(Mn)	50 µg/l	245 ± 25	39 ± 4	60 ± 6	36 ± 4
Sulfates	250 mg/l	368 ± 15	380 ± 15	409 ± 16	200 ± 8
Oil products	50 µg/l	21 ± 2	<20	35 ± 4	62 ± 6

- MP 20 (EGW 10) newly built at the end of 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.

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, Iron and oil products which is above the regulated limit.

Parameter	Quality standard under Regulation No 1/2010	Assay by an accredited laboratory, conducted on 28.02.2020 water level 12,56 м.*	Assay by an accredited laboratory, conducted on 18.06.water level 12,32 м.*	Assay by an accredited laboratory, conducted on 01.10.2020 water level 14,38 м.*	Assay by an accredited laboratory, conducted on 10.12.2020 water level 11,41 м.*
(Mn)	50 µg/l	496 ± 50	350 ± 35	812 ± 81	2506 ± 125
(Fe)	200 µg/l	378 ± 38	160 ± 16	4425 ± 221	673 ± 67
Oil products	50 µg/l	21 ± 2	204 ± 10	78 ± 8	61 ± 6

- MP 21 (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 in 2020 show that the ion concentrations are compliant with Regulation 1/2010 on Groundwater Exploration, Use and Protection.

- MP 22 (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 for 2020 show that the water condition at this point is compliant with Regulation 1/2010 on Groundwater Exploration, Use and Protection.

- MP 23 (EGW 13) - newly built at the end of 2019. The monitoring point is located in the metamorphic rocks northwest of the open pit mine. The point aims to monitor the water quality in the underground water body BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.

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, Iron and oil products which is above the regulated limit.

Parameter	Quality standard under Regulation No 1/2010	Assay by an accredited laboratory, conducted on 28.02.2020 water level 2,58 м.*	Assay by an accredited laboratory, conducted on 18.06.2020 water level 2,64 м.*	Assay by an accredited laboratory, conducted on 01.10.2020 water level 2,77 м.*	Assay by an accredited laboratory, conducted on 10.12.2020 water elvel 2,75 м.*
(Mn)	50 µg/l	586 ± 59	320 ± 32	399 ± 40	546 ± 55
(Fe)	200 µg/l	92 ± 9	<1.0	707 ± 71	454 ± 45
Oil products	50 µg/l	752 ± 23	313 ± 16	285 ± 14	372 ± 19

- MP 24 (EGW 14) - newly built at the end of 2019. The monitoring point is located east of the ore sole. The point aims to monitor water quality in the underground water body BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.

Water analysis in 2020 was not made, due to the fact that in all sampling the point is without water inflow (dry).

- MP 25 (EGW 15) - newly built at the end of 2019. The monitoring point is located west of the open pit mine. The point aims to monitor water quality in the underground water body BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.

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

Parameter	Quality standard under Regulation No 1/2010	Assay by an accredited laboratory, conducted on 28.02.2020 water level 16,01м.*	Assay by an accredited laboratory, conducted on 18.06.2020 water level 16,1 м.*	Assay by an accredited laboratory, conducted on 01.10.2020 water level 16,47 м.*	Assay by an accredited laboratory, conducted on 10.12.2020 water level 16,27 м.*
Ni	20 µg/l	21 ± 2	23 ± 2	27 ± 3	26 ± 3
Oil products	50 µg/l	36 ± 4	100 ± 10	<20	84 ± 8

- MP 26 (EGW 16) - newly built at the end of 2019. The monitoring station is located west of the open pit mine. The point aims to monitor the quality in the underground water body BG3G000PtPg049 - Fissure-flow groundwaters, East Rhodope complex.

The chemical tests of the samples taken from the water abstraction for 2020 show that the water condition at this point is compliant with Regulation 1/2010 on Groundwater Exploration, Use and Protection.

After the registered exceedances of oil products in in the newly built groundwater piezometers and the analysis of their origin by a qualified hydrogeologist, the Company develop measures and actions for cleaning the pizemotertes by specialized equipment which are part Appendix 4. The results showed that this method gives the expected result and oil products were significantly reduced at the affected points. This process will continue in 2021 until they are completely cleared. the results of the sampling in the third and fourth quarters of the year will be reviewed beforehand, and further action will be assessed in relation to the results obtained

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 2020:

- 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;
- 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 2020 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. At the end of 2019, the construction of all groundwater piezos were completed, as in 2020 they were taken four times a season. The results of the monitoring are presented in this report

13. CONCLUSION

After summarizing the results of the tests conducted in 2020 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 13 /16.02.2021, effective 16.02.2021) 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 exceedance of Aluminium according Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants, according to the results of monitoring points ESW 01 and ESW02

Exceedances of the regulated limits - environmental quality standards for the specific pollutant Aluminum (Al) in 2020 and 2021. Increased concentrations are observed in the entire area of the Krumovitsa River as the highest values are before the production site of DPM Krumovgrad and the Egrechka River. Kesebir). In the (Buyuk Dere and Kaldjik Dere) the values are lower, but also exceed the regulated limits. After the inflow of the tributaries into the Krumovitsa River, the concentrations gradually decreased, but exceedances were found in both points near the town of Krumovgrad - ESW 09 and ESW 10. The same trend is noted in the results of own monitoring in 2016, 2017 and 2018. In some months no concentrations of Al are found, in others they are under the regulated limits, but there are also months when the concentrations are exceed the regulation limit in a large part of the area of the Krumovitsa River (October, 2017; December, 2018). The data from the conducted

monitoring show that the production site of DPM Krumovgrad cannot be determined as a source of pollution with aluminum, as the most probable reason is increased background values for this indicator in the upper part of the area of the Krumovitsa River.

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 exceedances of Aluminium according Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants, according to the results of monitoring points ESW 09 and ESW 10.

Characteristic deviations from the regulation limit for nitrogen and phosphorus indicators (nutrients), dissolved oxygen and BOD5 in the two monitoring points ESW 09 and ESW 10 in the area of Krumovgrad. The reason for these exceedance are the discharged untreated wastewater from two of the collectors of the city sewerage of Krumovgrad, which are located above the monitoring points. Characteristically, these deviations occur mainly during the summer-autumn low water and thus act specifically on the various indicative to Nutrient biological quality elements depending on their life cycle.
The biogenic pressure at both points cannot be related to the activity of DPM Krumovgrad due to the method and efficiency of treatment of WWTP (reverse osmosis) and the fact that DPM Krumovgrad uses wastewater in its close circulating water supply at the site and their discharge of water after purification is needed, only in case of heavy rainfall. (for the reporting period the company did not discharge). Generated Domestic and fecal waters at the production site of the Company are treated in a treatment plant for domestic and fecal waters and included in the circulating water supply.

Determination of one-time increased values of manganese, iron and cadmium, which do not exceed the specified regulation limit. They are most often found in the monitoring points before the production site of DPM Krumovgrad and the probable causes are identical to those of the specific pollutant aluminum. In connection with these findings, it is necessary to seek existing information on other man-made sources or possible background effects with the assistance of the competent authorities. In order to carry out a reliable assessment of the chemical status of the waters, DPM Krumovgrad will introduce a minimum frequency for analysis of priority substances according to the requirements in Annex V of the WFD - 12 times / year. A priority in this monitoring is to analysis the cadmium, for which concentrations are close to the regulation limit, without exceeding them.

The results of the assessment of the ecological condition of phytobenthos show a steady trend for good condition in all surveyed monitoring points (located before and after the production site of DPM Krumovgrad). These data show the absence of toxic contamination to which phytobenthos is sensitive, but on the other hand it is necessary to take into account the fact that samples are taken during the high water period (May), when there are usually no exceedances for FH indicators. The life cycle of BEC phytobenthos is short (20-30 days), so communities can recover quickly from accidental contamination in the presence of sufficient water runoff. This can explain the good condition of this biological element even after the discharge of wastewater from the sewers of Krumovgrad, although it is most sensitive to biogenic pollution. This finding shows that despite the fact that the BEC survey methodology has been followed, the quality data obtained for this quality element need to be further sampled during the summer season with reduced water runoff (before the riverbed dries up).

The aim is to gather enough information and data to rule out any doubts and to have traceability.

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 old piesometer casing or drillhole contamination from the drilling process. (no longer used for water monitoring) 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.

In 2020, measures were taken to establish the reasons for the discrepancy in the indicators of oil products for some of the newly built points in 2019. The company assigns to competent hydrogeologist, analysis of the causes that contribute to the detection of exceedances, as part of the study is carried out through a specialized technique for viewing the piezometric data, on the basis of which sufficiently reliable information is obtained. In 2020, was decided to use a specialized technique that is used to clean the inner tube of the piezometer, where the presence of grease is detected. After two purifications of the affected piezometers, in 2021 the results showed that the cleaning method gave a fascinating result.

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