Water Monitoring Report for the Ada Tepe Prospect of Khan Krum Deposit 2022

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1. Introduction and description of the monitored site

This report was prepared on the basis of an approved Environmental Monitoring Plan of Dundee Precious Metals Krumovgrad EAD and 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 "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 work 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 operation of DPMK's Project for Mining and Processing of Gold Ore from Ada Tepe prospect, Khan Krum Deposit, Krumovgrad. The main objective in 2022 was ongoing collection and interpretation of monitoring data about the water quality during the project operation.

The monitoring involved collection of samples at approved points, whose assays were used to identify changes in the condition of the waters in the area of the Ada Tepe prospect of the Khan Krum Deposit. A certified laboratory performed the sampling and the assays.

2. GENERAL

The Water Monitoring Report (the Report) of **Dundee Precious Metals Krumovgrad ("DPMK" or "the Company")** has been drafted to present environmental monitoring results for the Ada Tepe Prospect, Khan Krum Deposit, Krumovgrad Municipality, and to meet the Company's commitments set out in the Environmental Monitoring Plan, approved by the relevant environmental authorities in 2014.

This Plan was updated to reflect the mine commissioning in 2019.

As evident from outgoing letter ПУ-03-14/03.06.2019, the East Aegean Basin Directorate - Plovdiv signed off the updated Plan, in particular the two sections on *Surface and Groundwater*s on the condition that the Company makes some additional amendments to the Plan and presents information on each monitoring point, namely on chemical and quantitative groundwater monitoring. According to the instructions for the update of the Monitoring Plan regarding recently set up groundwater monitoring points at the end of 2019, the Company should take samples and submit results to the Basin Directorate, creating and maintaining data sheets for each monitoring point. All conditions listed in letter, ref. ПУ-03-14/03.06.2019 have been met and the required documentation has been submitted to the authorities.

The mine was commissioned in 2019.

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

- Permit #31530328/04.03.2013, amended by Resolution # PP-4330/20.07.2021 and Resolution #PP-4955/10.02.2023 on groundwater abstraction; Valid until 04.03.2031.
- Water Body Use Permit #33140188/21.08.2015 for discharge of wastewater into surface waters to meet site operational demands, and valid until 08.10.2027.
- Permit # 31190071/29.04.2020* for surface water abstraction from the Arda River for other purposes (exploration drilling), valid until 29.04.2023.

*(The Company has applied (# PP-04-25/02.12.2022) to extend the validity of the Permit for surface water abstraction from the Arda River. The application is being reviewed by the Plovdiv Basin Directorate).

3. DESCRIPTION OF THE ENVIRONMENTAL, CHEMICAL AND QUANTITATIVE CONDITION OF THE WATER BODY RELEVANT TO THE INVESTMENT PROJECT

In terms of the project area, CoM Resolution № 1106/29.12.2016 endorses 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 the surface and ground water bodies that may be affected by the operation of the gold mining project or are located in the project area takes into account the findings and the measures set out in the 2016-2021 RBMP. The 2022-2027 Water Body Management Plans (i.e. the third ones in a row) are currently being drafted and prepared.

The Company is the holder of Permit #31530328/04.03.2013 amended by Resolution# 4330/20.07.2021 and Resolution # PP-4955/10.02.2023 for extending the validity term of Permit #31530328/04.03.2013 for groundwater abstraction using a new abstraction facility – a tube well with an infiltration lateral, issued by the Director of East Aegean Region River Basin Directorate in Plovdiv, with extended validity term by 04.03.2031. The purpose of abstraction is to meet process and drinking water demands, and other water needs. The water supply source is a Quaternary aquifer, BG3G000000Q010 Interstitial groundwater in the Quaternary deposits. The permitted average daily abstraction rate is Q_d = 4.83 L/s; $Q_{max.}$ = 5.0 L/s, the total permitted quantity is 152,250 m³ per annum, of which up to 127,000 m³ to meet process demands, up to 6,500 m³ to meet drinking demands and up to 18,750 m³ to meet other needs.

The quantities of water that were abstracted from Jan. 1 to Dec. 31, 2022, are as follows:

- 4,677 m³ for for drinking needs (digital water meter #D1T 500045 readings: on Jan. 1, 2022 - 44, 930 $m^3$and 50, 026 m^3 on Dec. 31; 419* m^3 were subtracted as ‘other needs’, # S51EOB19000, in line with the permitted quantity of 6,500 m³ per annum;
- 80,143 m³ for process needs (digital water meter #D1T 500047 readings: 110,011 m³ on Jan. 1 and 193,514 m³ on Dec. 31; 3360** m³ were subtracted as ‘other needs’, #S51EOB19000, in line with the permitted quantity of 127,000 m³ per annum.
- 3,779 m³ for other needs (digital water meter #S51EOB19000 installed on Jan 1, 2022, whose readings were 2,791 m³ on the starting date and 6,570 m³ on Dec 31, 2022.

  * Water consumption for ‘other needs’ from 01.01.2022 till 06.06.2022 was measured by water meter #S51EOB19000, installed on a diversion of the pressure pipeline for domestic water supply /downstream of water meter #D1T 500045.

  ** On 07.06.2022 water meter #S51EOB19000 for ‘other needs’ was relocated on a process water supply pipeline, downstream of water meter # D1T 500047. The relocation was also listed in Record КЖ- 093/16.06.2022 of the Plovdiv River Basin Directorate.

  The subtraction of 419 m³ from the domestic water digital meter and 3360 m³ from the process water digital meter was done to avoid the duplication of these quantities.

  A Water Abstraction Declaration under art.194b of the Water Act was sent to the Plovdiv River Basin Directorate with outgoing letter # 0020/24.01.2023, and the due fees were paid by bank transfer to the River Basin Directorate on 02.02.2023.

Surface Water Characterization

The site whereon gold ore mining and processing take place is situated in the left portion of the mid-stream watershed of the Krumovitsa River, a right-bank tributary of the 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 common water body.

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

The Krumovitsa River is the main surface water body, which may potentially receive treated wastewater generated by the mining operation. It originates 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 km². At the Krumovgrad town gauge station (HMS 61550), which is the only one in the river watershed, the river has:

- a length of 37.3 km
- a watershed area of 497.6 km²;
- an average gradient of 19‰;
- average elevation of 494 m;
- river network density of 1÷1.5 km/km²;
- average vegetation cover in the watershed of 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, have eroded severely in the conditions of 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).

The river typology of the Arda River basin indicates that the entire watershed of the Krumovitsa River, the main watercourse and its tributaries, belongs to a common water body BG3AR200R009 – "Krumovitsa River and tributaries ". The river type of the water body is transitional between R14b and R14c –

- **R14b Sub-Mediterranean Intermittent Rivers –** the lower parts of the Krumovitsa watershed, fromt he town of Krumovgrad up to its confluence with the Arda River. In this section, the river forms broad gravels (except some rocky parts with distinct ponding), and the river current is very slow yet constant.

- **R14c Sub-Mediterranean temporary (intermittent) small and medium-sized rivers and streams –** mid part of the Krumovitsa watershed, up to the town of Krumovgrad. During the low water period, the river loses its flow in its mid part and is represented by isolated ponds formed by groundwaters.

The parameters that characterize the river flow regime are as follows: drainage area – 497.6 km²; average discharge – 7,320 m³/s, peak discharge – 15,100 m³/s, and low discharge – 2,827 m³/s.

Brief overview of significant types of pressure and impact resulting from human activity.

There are municipal waste water treatment plants along the river. A wastewater treatment plant was built in 2019 to treat effluent generated by Company employees working on the Ada Tepe site. Treated domestic effluent reports back to the mining operation and

included in its return water cycle, i.e. there is no discharge into the environment.

Assessment of the pressure from physical /hydro-morphological changes on surface water body BG3AR200R009 regarding:

- Modifications/ dykes - weak pressure;
- Impounded areas - weak pressure;
- Drained areas - n/a;
- urbanization - n/a;
- Inert materials - weak pressure;
- 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 climate change scenario RCP 8.5, which refers to a gradual rise of greenhouse gases throughout the century (the most pessimistic scenario), the projected changes in the river flow are most notable in the long term in the period 2071-2100. The surface water bodies in the Arda River basin are within the scope of the following areas of climate change:

- 9 Upper Arda and tributaries
- 10 Lower and Middle Arda and tributaries

The climate change intensity forecast for Uppermost Arda River, and its upper tributaries is "moderate", reducing to "weak" for Middle and Lower Arda and its 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 Krumovitsa River and its Tributaries According to the 2016-2021 RBMP

River basin	Water body code	Water body name	Typology	Category	Biological indicators	Physical and chemical indicators	Environmental status/ potential	Chemical indicators
Arda River	#BG3AR200R009)	Krumovitsa and tributaries	#R14b)	River	good	good	good	good

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Groundwater Characterization

Interstitial and fissure-flow groundwaters dominate the minesite area. Interstitial groundwater flows are typical of the open pit area and along the Krumovitsa river and some of its tributaries. .

Fissure-Flow Groundwaters

The project footprint partly overlaps the aquifer identified as BG3G000PtPg049 – Fissure-Flow Groundwaters, Krumovgrad-Kirkovo Zone. It is evident from data presented in Table IV.2.1-8 that the aquifer has the lowest water potential – its modulus is 0.5 L/s.km². Fissure-flow groundwaters are recharged by runoff and predominantly flow along the discontinuities in the metamorphic rocks away from Ada Tepe in the direction of the Krumovitsa river and Kaldzhikdere gully, which are the main drainages of these flows. 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.

According to the 2021 Report on the Quality of the Waters within the East-Aegean Catchment Area (EACA), the chemical quality of BG3G000PtPg049 – Fissure-Flow Groundwaters, Krumovgrad-Kirkovo Zone, in 2021 was classified as ‘poor’ due to the elevated levels of iron and gross alpha activity. Data from the same report suggested that the groundwater resources of all the aquifers within the EACA were ‘good’. Two aquifers, BG3G00000NQ018 and BG3G00000NQ009, had a water exploitation index (WEI) above 60% (resource status

risk). By end March 2023, the Plovdiv River Basin Directorate had still not published on its website its 2022 Report on the status of water bodies.

Interstitial Groundwaters

Of particular interest are the waters accumulated in the aquifer coded BG3G000000Q010 – Interstitial Groundwaters in the Quaternary Deposits of the Arda River, which includes the section of the Krumovitsa River terrace extending 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 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 set up in the Krumovitsa gravels, 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 1,500 m^2/d, average hydraulic gradient of 0.002 and average floodplain width of 750 m, the dynamic groundwater draw is 26 L/s. 60 to 80% of the local abstraction resource comes from the Krumovitsa River recharge. Therefore, the EIA Resolution for approval of the Ada Tepe mining operation has set a condition that the Company should treat any wastewater to drinking water quality before discharge to the Krumovitsa.

According to the 2010-2011 RBMP, BG3G000000Q010 Interstitial Groundwaters in the Quaternary Deposits of the Arda River achieved good water chemical status, which was similar to previous years.

General Description of Wastewaters

The water management design at the Krumovgrad Gold Project is driven by a sustainable approach towards “zero discharge”.

The design, however, includes an option for treatment of excess water, which could potentially be produced on the site. A Storm Water Overflow Reservoir (SWOR) is constructed, which is able to handle short-term excess water volumes in the reclaim system resulting from a major rainfall event. The overflow from the main process water reservoir, i.e. the Raw and Process Water Reservoir (RPWR), reports to the SWOR. A pump station is set up to return water from the SWOR to the RPWR.

The second line of defense is a system of three evaporators, which can reduce the water levels in the SWOR in suitable weather conditions. Each evaporator comprises of a fan and a high-pressure suction pump. The evaporators take in SWOR water and then generate a mist above the reservoir to enhance evaporation.

If water levels of the SWOR continue to rise, the water will be diverted from the Process Plant water line to the water treatment facility situated north-west from the Paste Thickener Area (flotation tailings).

The purpose of this facility is to meet Condition I.4.2 of EIA Decision No 18-8,11/2011, i.e. to ensure that waste water is treated to drinking quality level based on chemical indicators. The treated flow can then be discharged via an 8km pipeline into Krumovitsa River, in compliance with Condition I.4.3 of the EIA Decision.

The WWTP is the third line of defense if a rainfall event generates excess (surplus) water in the plant reclaim water system. This option will be used on an as-required basis determined by the needs of the actual operation.

The the trigger that causes the WWTP to start is available free capacity of the SWOR.

No treated wastewater has been discharged into the Krumovitsa River in 2022.

4. ENVIRONMENTAL MONITORING/SAMPLING POINTS, INCLUDING THEIR PURPOSE, LOCATION SHOWN ON A SUITABLY SCALED MAP, COORDINATES, ELEVATION, DESIGN

The site water quality survey in 2022 covered 26 water sampling locations – 10 for surface waters and 16 for groundwaters.

The total number of water monitoring locations is 27, of which 10 for surface waters, 16 for groundwaters and 1 for wastewater after treatment (as needed). A map showing the locations of all the surface and groundwater monitoring points is included as Appendix 2. The selected locations are detailed in Table 4-1.1. The table gives a description of each individual point, including name, elevation, coordinates, water type (surface, ground or waste waters), sampling frequency, location and purpose.

Table 4-1.1: Water Monitoring Points							
#	**Name**	**Elevation (m)**	**Coordinates (WGS84)**	**Type**	**Quality Indicators**	**Sampling Frequency**	**Location, Description and Purpose**
1	ESW 01	236	E 387727 N 45. 86,770	SW	as provided in Table 4-1-2	Quarterly	Krumovitsa River – at the point of origin (at confluence of Egrechka River and Kessebirdere) Indicates the surface water quality south of the minesite
2	ESW 02	249	E 253913.391 N 412745,461	SW	as provided in Table 4-1-2	Quarterly	Krumovitsa River upstream of Krumovgrad Indicates surface water quality upstream of town discharges.
3	ESW 03	233	E 38 69 38 N 45 86 342	SW	as provided in Table 4-1-2	Quarterly	Kessebirdere - upstream of confluence with the Egrechka River. Indicates the water quality upstream of confluence with the Egrechka River
4	ESW 04	235	E 38 76 08 N 45 86 646	SW	as provided in Table 4-1-2	Quarterly	Egrechka River – upstream of confluence with Kessebirdere Indicates the water quality upstream of confluence with Kessebirdere
5	ESW 05	222	E 39 03 67 N 45 88 680	SW	as provided in Table 4-1-2	Quarterly	Buyukdere - upstream of confluence with Krumovitsa River Indicates the water quality in Buyukdere upstream of its confluence with the Krumovitsa River. .
6	ESW 06	240	E 386225 N 4588202	SW	as provided in Table 4-1-2	Quarterly	Kaldzhikdere - upstream of the bridge at Pobeda hamlet, Ovchari village. It indicates the water quality in the upper portion of the gully upstream of the intersection with the site access road and the site itself.
7	ESW 07	220	E 38 77 91 N 45 89 777	SW	as provided in Table 4-1-2	Quarterly	Kaldzhikdere - upstream of confluence with the Krumovitsa Indicates the quality of the stream flowing west of the minesite
8	ESW 08	231	E 388364 N 4587708	SW	as provided in Table 4-1-2	Quarterly	. The Krumovitsa River, about 200 m downstream of the North Collection Sump of the IMWF
9	ESW 09	215	E 386952 N 4592512	SW	as provided in Table 4-1-2	Quarterly	. The Krumovitsa, about 100m upstream of discharge of untreated sewage from Krumovgrad Reference levels for point ESW 10. Indicates the water quality before discharge of untreated sewage
10	ESW 10	215	E 386822 N 4592681	SW	as provided in Table 4-1-2	Quarterly	. Krumovitsa River, approximately 100m upstream of the discharge point The purpose is to assess the impact of untreated sewage discharge from Krumovgrad on the surface waters.
11	EGW 01	n/a	E 388187.46	GW	Water level	Monthly	A borehole. The monitoring point is located NE of the site and covers the fissure-flow groundwater flowing in the direction of the Krumovitsa from the entire SE sector of Ada Tepe. It is located in Eocene sandstones

Table 4-1.1: Water Monitoring Points							
#	**Name**	**Elevation (m)**	**Coordinates (WGS84)**	**Type**	**Quality Indicators**	**Sampling Frequency**	**Location, Description and Purpose**
			N 4589517,6		as provided in Table 4-1-2	Quarterly	and conglomerates. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex
12	EGW 02	312	E 388103 N 4588506	GW	Water level	Monthly	A village well for irrigation. The point is a well, which is located E-NE of the open pit at the foot of the slope (in Chobanka hamlet), and covers groundwaters flowing in Palaeocene breccio-conglomerates and sandstones (Krumovgrad Group), draining to E-NE to the Krumovitsa River. . The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex
					as provided in Table 4-1-2	Quarterly	
13	EGW 03	312	E 386986 N 4588201	GW	Water level	Monthly	An investigation borehole. The monitoring point is located 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 area on the west slope of the deposit. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex,
					as provided in Table 4-1-2	Quarterly	
14	EGW 04	229	E 387596 N 4586825	GW	Water level	Monthly	An investigation borehole. The monitoring point is set up in the metamorphic rocks slope descending to the Krumovitsa River terrace and covers groundwater flowing south below the mine waste facility. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.
					as provided in Table 4-1-2	Quarterly	
15	EGW 05	220	E 387957 N 4591016	GW	Water level	Monthly	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 domestic and potable needs. The purpose of monitoring is to indicate the water quality prior treatment in the Quaternary aquifer of BG3G000000Q010 Interstitial Groundwaters in the Arda River Quaternary Deposits.
					as provided in Table 4-1-2	Quarterly	
16	EGW 06	218	E 387590 N 4590649	GW	as provided in Table 4-1-2	Quarterly	Shaft well 1 of Ovchari-Krumovgrad II drinking water abstraction constructed in the alluvials of the Krumovitsa River. It indicates any derogation of the quality of the groundwater for potable and domestic use. The purpose of monitoring is to indicate the water quality prior treatment in the Quaternary aquifer of BG3G000000Q010 Interstitial Groundwaters in the Arda River Quaternary Deposits.
17	EGW 07	230	E 387521 N 4586750	GW	as provided in Table 4-1-2	Pursuant to the Water Abstraction Permit (quarterly as a minimum)	A tube well with infiltration lateral constructed in the alluvials of the Krumovitsa River. It indicates any derogation of the quality of the groundwater for potable and domestic use. The purpose of monitoring is to indicate the water quality of the Quaternary aquifer of BG3G000000Q010 Interstitial Groundwaters in the Arda River Quaternary Deposits.
18	EGW 08	n/a	E 387367	GW	Water level	Monthly	A monitoring borehole (piezometer) high at Ada Tepe, a reference point upstream of the IMWF. It is set in a

Table 4-1.1: Water Monitoring Points							
#	**Name**	**Elevation (m)**	**Coordinates (WGS84)**	**Type**	**Quality Indicators**	**Sampling Frequency**	**Location, Description and Purpose**
			N 4587549		as provided in Table 4-1-2	Quarterly	metamorphic complex – metagranites and gneisses with rare interfingering with schists. 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	GW	Water level	Monthly	Monitoring drill hole (piezometer), at the toe of the north Collection Sump before the Krumovitsa River. It is set in a metamorphic complex – metagranites and gneisses with rare interfingering with schists. The groundwater is fissure-flow type, draining in the direction of the Krumovitsa River. The purpose of monitoring is to indicate the quality of the groundwater that flows downstream of the IMWF.
					as provided in Table 4-1-2	Quarterly	
20	EGW 10	n/a	E 388392 N 4587262	GW	Water level	Monthly	Monitoring drill hole (piezometer), at the toe of the southern Collection Sump before the Krumovitsa River. It is set in a metamorphic complex – metagranites and gneisses with rare interfingering with schists. The groundwater is fissure-flow type, draining in the direction of the Krumovitsa River. The purpose of monitoring is to indicate the quality of the groundwater flow downstream of the IMWF.
					as provided in Table 4-1-2	Quarterly	
21	EGW 11	325	E 385053 N 4589103	GW	as provided in Table 4-1-2	Quarterly	Zvanarka village water abstraction. The wells abstract waters from sources outside of the Krumovitsa gravels. They drain the flows in the Paleogene sediments. The purpose of monitoring is to indicate the drinking water quality.
22	EGW 12	220	E 389417 N 4589599	GW	as provided in Table 4-1-2	Quarterly	A shaft well of the pump station at Guliika village. It is constructed in the alluvial deposits of the Krumovitsa River. The purpose of monitoring is to indicate the drinking water quality.
23	EGW 13		E 387011 N 4588460	GW	as provided in Table 4-1-2	Quarterly	It is set up in the metamorphic rocks to the NW of the open pit. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.
24	EGW 14		E 387874 N 4587860	GW	as provided in Table 4-1-2	Quarterly	The point is set up to the east of the ROM Pad. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.
25	EGW 15		E 387360 N 4588393	GW	as provided in Table 4-1-2	Quarterly	The monitoring point is set up to the west of the open pit. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.
26	EGW 16		E 387355 N 4588170	GW	as provided in Table 4-1-2	Quarterly	The monitoring point is set up to the west of the open pit. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.
27	EWW 02	n/a	E 253839.570	WW	Quantity	Continuous	At discharge of the Wastewater Treatment Plant (for mixed wastewater types). The purpose of

Table 4-1.1: Water Monitoring Points							
#	**Name**	**Elevation (m)**	**Coordinates (WGS84)**	**Type**	**Quality Indicators**	**Sampling Frequency**	**Location, Description and Purpose**
			N 412836.999		as indicated in Table 2-2.1. in the Waters Section, EMP	Monthly as discharges occur	monitoring is to indicate the quality of the treated effluent before discharge to the Krumovitsa River (as needed).

* "Seasonal" means:
- Spring – April through June;
- Summer – July through September;
- Autumn – October through December;
- Winter – January through March.

Table 4-1.2: Surface and Ground Water Assays (Accredited Laboratory).		
Monitoring Point (MP)	Assays	**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*.	Quarterly by an accredited laboratory
ESW 08, 09, 10 – surface waters	Apart from the envisaged physical and chemical profile listed above, the monitoring should also cover the following the biological elements for quality: Macrozoobenthos-based biotic index (*Methods for Monitoring of Macrozoobenthos in Rivers as a Biological Element (Biotic and Trophic Index*)) and IPS index for phytobenthos – diatom algae (*Methods for Monitoring of Phytobenthos in Rivers as a Biological Element (IPS Index)*) – *Order #РД-412/15.06.2012 of the Minister of Environment and Waters*.	Once per year
EGW 07, after treatment	Pursuant to *Regulation #9 on Drinking Water Quality.* 1. Microbiological indicators according to Table A.1 for water within the meaning of art. 6(1)(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 of: Ph, Al, NH_4, 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 dose, total alpha-activity, total beta-activity, natural U.	Quarterly by an accredited laboratory
EGW 7 (Fresh water abstraction well supplying the mine site) after treatment	Pursuant to *Regulation #9 on Drinking Water Quality.* 1. Microbiological indicators according to Table A.1 for water within the meaning of art. 6(1)(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, F-, Cr, CN^- 3 Table C - indicators of: Ph, Al, NH_4, 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	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. Volume of exhausted waters.

	indicative dose, total alpha-activity, total beta-activity, natural U.	

Surface and groundwater samples for testing were taken in March, June, September and December 2022, in line with the Monitoring Plan. Samples were taken from all the monitoring points if they were wet. Appendix 2 presents maps of surface and groundwater monitoring points sampled for quality analysis in 2022. These points were selected to ensure collection of sufficient data for the proper monitoring of background water quality in the Ada Tepe minesite area and along the Krumovitsa River and its tributaries. The assay certificates are presented in Appendix 3 (digital format). The static water levels are provided.

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."

The sampling campaign for biotic index for macrozoobenthos and IPS index for phytobenthos – diatom algae took place in June 2022.

5. MONITORING DURATION AND FREQUENCY

Four sampling campaigns were conducted by an accredited laboratory in 2022 and the water assays for each monitoring point are shown in Table 4-1.2. The monitoring points that were dry at the time of sampling were marked as ‘dry’ in the sampling log. All water quality test results were reviewed against the regulated limits and the assay certificates are provided in Appendix 3 (in digital format) for better clarity.

Surface water test results were reviewed to the values provisioned in *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.* (amended and supplemented in SG 97/11.12.2015, effective 11.12.2015).

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

6. TERMS OF USE OF THE MONITORING SYSTEM

The terms of use of the monitoring system are related to the operating cycle of the mine. The open pit and crusher operations are based on three 8-hour shifts a day, 7 days a week. The processing of crushed ore is a continuous operation based on three 8-hour shifts a day, 7 days a week.

The internal monitoring will go in parallel with the mine operations for the entire period from the approval date of the monitoring plan through mine operation and closure.

7. MONITORING DATA ANALYSIS AND REPORTING FORMAT

- The Company submits the internal monitoring results to the Director of the East Aegean Catchment Area Directorate by March 31 in compliance with art. 174 of the Waters Act, and to the Regional Environment and Waters Inspectorate within the deadlines specified in the respective permits issued under the Waters Act;
- Details of the internal monitoring system including the description of the Internal Monitoring Plan (locations, parameters and sampling frequency) and the monitoring results are published on the Company website (in Bulgarian and English).

- One per annum - a Report (in Bulgarian and English) is submitted to the MoEW every year by March 31. Following receipt, the MoEW forwards an English version of the Report to the Greek Ministry of Environment, Energy and Climate Change. Water Quality Monitoring Plan results are presented in this report. 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.

The analysis of water monitoring data includes a comparison of the water sample assays against the standards for surface, waste and groundwater quality, which are regulated by the by-laws to the Waters Act, and the permit limits under the current water use/discharge permits.

8. CRITERIA FOR TIMELY NOTIFICATION

The criteria for timely notification are:

- upon scheduled shutdowns of the wastewater treatment facility;
- upon emergency shutdowns of the wastewater treatment facility;
- upon unavoidable discharge of wastewaters in an emergency without prior treatment;
- in an emergency leading to unavoidable pollution of surface and ground waters.

If one or more of the above emergencies endangering surface and groundwater quality occurs, notifications and details about the emergency response must be sent to:

- the East Aegean Catchment Area Directorate,
- the Haskovo REWI,
- the Kardzhali Regional Health Inspectorate;
- the Krumovgrad Municipality;
- the Kardzhali District Governor;
- other authorities, as indicated in the Site Emergency Response Plans drafted in line with the provisions of art 35 of the Disaster Protection Act.

9. FUNCTIONAL LINES FOR PROVISION OF MONITORING INFORMATION

Water monitoring data is kept in DPMK's Environmental Protection Department, covering: records (sampling and assay results), database of assay results, info maps.

Annual Monitoring Reports are prepared for each calendar year Copies of the annual monitoring reports are available in Bulgarian and in English on the corporate website at https://www.dundeeprecious.com/English/Operating-Regions/Current-Operations/Ada-Tepe/Documents/default.aspx

10. OTHER REQUIREMENTS REGARDING THE CONTENTS OF THE PLAN

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

11. Results from the implementation of the MONITORING PLAN

Water sampling and assays were performed by the Eurotest Control accredited laboratory four times in March, June, September and December 2022. Samples were taken from surface waters from the Krumovitsa River and its 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 the mining and processing operations in the future.

Assay results including a spreadsheet for all monitoring locations are are presented in Appendix 3.

Surface Waters

The water quality of the Krumovitsa River and its tributaries was tested at 10 points in 2022. Surface waters were tested in all four quarters of the year under the parameters set out in item 4.1. of this Report.

According to Regulation № H-4, the 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 type, Code R14b. The environmental assessment of any water body (if there are at least 4 assays per year – one for each season) is based on the **average annual values (AAV)**.

The observations at the surface water monitoring locations are as follows:

- 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 indicates the water quality of the waters of the Upper Krumovitsa upstream of the mine site but close to its the southern part.

  Four water samples were assayed in the reporting year.

The assays did not exceed the regulated limits based on the physio-chemical indicators 'excellent' quality for intermittent type of rivers (such as the Krumovitsa) and the quality standards for chemical elements and other substances for surface waters produced internally (AAV-EQS) under Regulation #H-4/ 14.09.2012 on Surface Water Characterization. The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.

Assay certificates are provided in Appendix 3.

In June 2022, the Executive Environment Agency through its Smolyan Regional Laboratory took samples for laboratory analysis, assessing macrozoobenthos and phytobenthos as BQEs. The results indicated good status of the IPS index and good status of the biotic index.

- MP #2 (ESW 02 – Krumovitsa River upstream of Krumovgrad. It indicates water quality upstream of Krumovgrad. The MP is located downstream of the minesite and is indicative of water quality along the Krumovitsa River.

Assays showed elevated aluminum levels as per the physio-chemical indicators for 'excellent' quality for intermittent type of rivers (such as the Krumovitsa) and the quality standards for chemical elements and other substances for surface waters produced internally (AAV-EQS) under Regulation #H-4/ 14.09.2012 on Surface Water Characterization. The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.

The MP has been selected to monitor surface water quality in Upper Krumovitsa, i.e. upstream of Krumovgrad and was included in the 2019 Water Monitoring Plan. Three samplings took place in 2022 - on 17.03.2022, 08.06.2022 and 02.12.2022. No fourth sample was taken since the MP was dry in September 2021 and could not be sampled (assay records are presented in Appendix 3).

- MP #3 (ESW – 03 – Kessebir River downstream of Sinap, upstream of the confluence with Egrechka River

The location of this MP is 600 m to the east of Sinap village. It collects data on any background pollution in Kessebirdere's water catchment area, upstream of the minesite.

Four water samples were assayed in the reporting year. Assays showed elevated aluminum, iron and copper levels, as per the physico-chemical indicators for 'excellent' quality for intermittent type of rivers (such as the Krumovitsa) and the quality standards for chemical elements and other substances for surface waters produced internally (AAV-EQS) under Regulation #H-4/ 14.09.2012 on Surface Water Characterization. The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.

The quality was 'excellent' based on all physio-chemical indicators. The assay certificates are provided as Appendix 3.

- MP #4 (ESW 04 – Egrechka River – upstream the confluence with Kessebirdere

The location of this MP is 500 m to the south, upstream the Process Plant. Its purpose is to gather data about any pollution in the water catchment area of the Egrechka River. This is another background monitoring point since it is located upstream the mine site.

Four water samples were assayed in the reporting year. Test results show elevated aluminum levels as per Regulation № H-4 /14.09.2012 on Surface Water Characterization.

The quality of the water body was 'excellent' based on all physio-chemical indicators.

The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants. The assay certificates are provided as Appendix 3.

- MP #5 (ESW 05) – Buyukdere upstream of confluence with Krumovitsa River.

The purpose of this point is to gather data about any pollution generated by the hamlets in the watershed and ultimately reporting to the Krumovitsa River. Buyukdere is a right-bank tributary of the Krumovitsa River and its confluence is downstream the minesite. Only one water sample was taken in 2022 since the MP was dry during the other sample takings. Test results show elevated aluminum levels as per Regulation № H-4 /14.09.2012 on Surface Water Characterization. The quality of the water body was 'excellent' based on all physico-chemical indicators.

The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.

The sampling logs are provided as Appendix 3.

- MP #6 (ESW 06) – Kaldzhikdere upstream of the bridge at Pobeda hamlet of Ovchari village.

It indicates the water quality in the upper portion of the gully upstream of the intersection with the site access road and the site itself.

Three water samples were tested in the reporting period – the MP could not be sampled in the summer because it was dry.

Assays showed elevated aluminum levels as per the physio-chemical indicators for 'excellent' quality for intermittent type of rivers (such as the Krumovitsa) and the quality standards for chemical elements and other substances for surface waters produced internally (AAV-EQS) under Regulation #H-4/ 14.09.2012 on Surface Water Characterization.

The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.

The assay certificates are provided as Appendix 3.

- MP #7 (ESW 07) – Kaldzhikdere upstream of confluence with Krumovitsa

This MP is located N-NW, 300 m from the confluence point of Kaldzhikdere and the Krumovitsa River. . The waters in this gully are directly associated with the runoff from the Ada Tepe hill. The purpose of this point is to gather data on waters generated by the mine site and residential areas in the watershed that ultimately report to the Krumovitsa River.

Three samples were tested in the reporting period – the MP could not be sampled in the summer because it was dry.

Assays showed as per the physio-chemical indicators 'excellent' quality for intermittent type of rivers (such as the Krumovitsa) and the quality standards for chemical elements and other substances for surface waters produced internally (AAV-EQS) under Regulation #H-4/ 14.09.2012 on Surface Water Characterization showed elevated aluminum levels.

The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.

The assay certificates are provided as Appendix 3.

- MP #4 (ESW 08) – Krumovitsa River downstream of the North Sump of the IMWF.

Four water samples were assayed in the reporting year.

Assays showed elevated aluminum levels as per the physio-chemical indicators for 'excellent' quality for intermittent type of rivers (such as the Krumovitsa) and the quality standards for chemical elements and other substances for surface waters produced internally (AAV-EQS) under Regulation #H-4/ 14.09.2012 on Surface Water Characterization.

The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.

In June 2022 the Executive Environment Agency through its Smolyan Regional Laboratory took samples for laboratory analysis, assessing macrozoobenthos and phytobenthos as BQEs. The results indicated good status of the IPS index and moderate status of the biotic index.

The assay certificates are provided as Appendix 3.

- MP #9 (ESW 09) – Krumovitsa River 100m upstream of the wastewater discharge point.

The location of this MP is approximately 100m upstream of the discharge point. ESW 09 provides the reference levels for ESW 10. It indicates the quality of the Krumovitsa waters upstream of the discharge point of the site wastewater treatment facility.

The MP was sampled 4 times in 2022. Assays showed elevated aluminum levels as per the physio-chemical indicators for 'excellent' quality for intermittent type of rivers (such as the Krumovitsa) and the quality standards for chemical elements and other substances for surface waters produced internally (AAV-EQS) under Regulation #H-4/ 14.09.2012 on Surface Water Characterization.

The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.

In June 2022, the Company commissioned the Executive Environment Agency through its Smolyan Regional Laboratory to take samples for laboratory analysis to assess macrozoobenthos and phytobenthos as BQEs. The results indicated good status of the IPS index and moderate status of the biotic index.

The assay certificates are provided as Appendix 3.

- MP #10 (ESW 10) – Krumovitsa River, downstream of the wastewater discharge point.

The location of this MP is at the Krumovitsa River, approximately 100m downstream of the discharge point. The purpose of monitoring is to assess the impact of any treated water discharge on the river water quality. The point was sampled 4 times during the reporting period.

Assays showed elevated aluminum levels as per the physio-chemical indicators for 'excellent' quality for intermittent type of rivers (such as the Krumovitsa) and the quality standards for chemical elements and other substances for surface waters produced internally (AAV-EQS) under Regulation #H-4/ 14.09.2012 on Surface Water Characterization.

The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.

In June 2022, the Company commissioned the Executive Environment Agency through its Smolyan Regional Laboratory to take samples for laboratory analysis to assess macrozoobenthos and phytobenthos as BQEs. The results indicated good status of the IPS index and moderate status of the biotic index.

The assay certificates are provided as Appendix 3.

Groundwaters

The monitoring at these points enables the company to track changes in static water levels and chemical composition of groundwaters. This allows collection of data, which can be used for comparison and assessment of possible indirect impacts of the mine operations on the groundwaters.

Groundwater sampling was conducted in line with the Monitoring Schedule.

The collection of data about the static groundwater levels continued in 2022 and the data is provided in Appendix 3, together with a brief analysis of their dynamics. The monitoring at these points enables the company to track the dynamics of the static water levels and the chemical composition of groundwaters. This allows collection of data, which can be used for comparison and assessment of possible indirect impacts of the mine operations on the groundwaters. The static groundwater levels variances are dictated by the recharge conditions and seasonal climatic conditions. Our analysis indicates that there is no direct link between water levels measured in various piesometers. However, all of them are directly dependent on recharge from precipitation.

The following groundwater monitoring points were sampled and assayed:

- Borehole MP #11 (EGW 01) – a new MP set up in end 2019 to the NE of the site. It covers fissure flows towards the Krumovitsa River from the entire NE sector of Ada Tepe. It is in Eocene sandstones and conglomerates. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.

Samples assayed in 2022 highlighted certain deviations from the quality standard under Regulation #1/2010 on Groundwater Exploration, Use and Protection.

2022 Dynamics and Deviations by Parameters and Date Relative to Water Levels

Indicator	Quality Standard under Regulation #1/2010	Assay by an accredited lab on 17.03.2022 at GW level of 1,17 m.*	Assay by an Accredited Laboratory on 08.06.2022 at GW Level of 3.00 m*	Assay by an Accredited Laboratory on 30.09.2022 at GW Level of 4.28 m*	Assay by an Accredited Laboratory on 09.12.2022 at GW Level of 3.02 m*
Sodium	< 200 mg/l	203 ± 10	219 ± 13	263 ± 16	212 ± 13
Ammonium	< 0.5 mg/l	2.1 ± 0.1	2.35 ± 0.12	2.8 ± 0.1	1.52 ± 0.08
Iron	200 µg/L	115 ± 12	148 ± 15	396 ± 40	215 ± 22
Manganese	50 µg/L	67 ± 7	76 ± 8	113 ± 11	4.8 ± 0.5
Arsenic	10 µg/L	15 ± 2	5.4 ± 0.5	<3.0	6.6 ± 0.7

*Results are analyzed in Section 13 below

- MP #12 (EGW 02) is a well, located E-NE of the open pit at the foot of the slope (in Chobanka hamlet), and covers groundwaters flowing in Palaeocene breccio-conglomerates and sandstones (Krumovgrad Group), draining to E-NE to the Krumovitsa River. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.

  The laboratory analysis of the collected samples indicated one non-compliant assay for arsenic in the sample collected on 17.03.2022. The rest of the assayed parameters met the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection.

- MP #13 (Borehole EGW 03) is in the metamorphic complex (metagranites and granite-gneiss) on the west slope of Ada Tepe and its purpose is to monitor groundwater flowing towards Kaldzhikdere from the drainage area on the west slope of the deposit. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.
  Samples assayed in 2022 show that tested parameters correspond to the quality standard under Regulation #1/2010 on Groundwater Exploration, Use and Protection.

- MP #14 (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 purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.

  The laboratory analysis showed that manganese in samples taken on 30.09.2022 and 09.12.2022 was two times higher than the established threshold. The rest of the assayed parameters met the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection.

- MP #15 (Borehole EGW 15), Krumovgrad drinking water abstraction, constructed the in the alluvials of the Krumovitsa River. It indicates any derogation of the quality of the groundwater for potable and domestic use prior to treatment. The purpose of monitoring is to indicate the water quality of the Quaternary aquifer of BG3G000000Q010 Interstitial Groundwaters in the Arda River Quaternary Deposits.
  The laboratory analysis indicates that the tested parameters meet the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection.
  In 2022, there were no exceedances of the limits under Regulation #1/2010 on Groundwater Exploration, Use and Protection.

- MP #16 (Borehole EGW 06) Ovchari-Krumovgrad II drinking water abstraction, constructed in the alluvials of the Krumovitsa River. It indicates any derogation of the quality of the groundwater for potable and domestic use prior to treatment. The purpose of monitoring is to indicate the water quality of the Quaternary aquifer of BG3G000000Q010 Interstitial Groundwaters in the Arda River Quaternary Deposits.
  The laboratory analysis indicated that in 2022 tested parameters meet the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection.
  The point was sampled only three times in 2022 because there was no access to it on 08.06.2022.

- MP #17 (Borehole EGW 15), a proprietary abstraction well, constructed the in the alluvials of the Krumovitsa River. It indicates any derogation of the quality of the groundwater for potable and domestic use prior to treatment. The purpose of monitoring is to indicate the water quality of the Quaternary aquifer of BG3G000000Q010 Interstitial Groundwaters in the Arda River Quaternary Deposits.
  The laboratory analysis indicates that the tested parameters meet the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection.
  A water supply system with a chlorination system and a UV sterilization system was commissioned in 2019.
  Assays show that the chlorination and UV sterilization systems gave results, i.e. parameters that are compliant with the provisions of Regulation #9/ 16.03.2001.

- MP #18 (EGW 08) – a new borehole completed in end 2019. This is a monitoring borehole high up on Ada Tepe and a reference point upstream of the IMWF. It is set in a metamorphic complex – meta granites and gneisses with rare interfingering with schists. The groundwater is fissure-flow type, draining in the direction of the Krumovitsa River. The purpose of monitoring is to indicate the background levels in the groundwater flowing towards the IMWF.
  The laboratory analysis indicates that tested parameters meet the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection.

- MP #19 (EGW 09) – a new borehole completed in end 2019. It is located at the toe of the IMWF's North Valley, between the North Sump and the Krumovitsa River. It is set in a metamorphic complex – meta granites and gneisses with rare interfingering with schists. The groundwater is fissure-flow type, draining in the direction of the Krumovitsa River. The purpose of monitoring is to indicate the quality of the groundwater flow downstream of the IMWF.
  The laboratory analysis indicates that the tested parameters meet the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection except for the elevated sulphate levels which, however, are lower than those in 2021.

- MP #20 (EGW 10) – a new borehole completed in end 2019. It is located at the toe of the IMWF's South Valley, between the South Sump and the Krumovitsa River. It is set in a metamorphic complex – meta granites and gneisses with rare interfingering with schists. The groundwater is fissure-flow type, draining in the direction of the Krumovitsa River. The purpose of the monitoring point is to indicate the quality of the groundwater flow downstream of the IMWF.
  The laboratory analysis indicates that the tested parameters meet the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection except for the following non-compliant assays:

2022 Dynamics and Deviations by Parameters and Date Relative to Water Levels

Indicator	Quality Standard under Regulation #1/2010	Assay by an accredited lab on 17.03.2022, at 2.57 m* groundwater level	Assay by an Accredited Laboratory on 09.06.2022 at GW Level of 2.64 m*	Assay by an Accredited Laboratory on 30.09.2022 at GW Level of 2.76 m*	Assay by an Accredited Laboratory on 09.12.2022 at GW Level of 2.78 m*
Manganese	50 µg/L	963 ± 96	379 ± 38	668 ± 67	883 ± 88
Iron	200 µg/L	177 ± 18	415 ± 42	906 ± 91	23 ± 2
Antimony	5 µg/l	<1.0	166 ± 17	<1.0	<1.0

*Results are analyzed in Section 13 below

- MP #21 (EGW 11) – Zvanarka drinking water abstraction. Wells abstract waters from sources outside the Krumovitsa gravels. They drain the flows in the Paleogene sediments. The purpose of this monitoring point is to indicate the quality of the water for potable and domestic use prior to treatment.
  The laboratory analysis of water samples from the pump station in 2022 indicates compliance with the provisions of Regulation 1/2010 on Groundwater Exploration, Use and Protection.

- MP #21 (EGW 11) – A tube well of the pump station at Guliika village. It is constructed in the alluvial deposits of the Krumovitsa River. The purpose of this monitoring point is to indicate the quality of the water for potable and domestic use prior to treatment.
  The laboratory analysis of water samples from the pump station in 2022 indicates compliance with the provisions of Regulation 1/2010 on Groundwater Exploration, Use and Protection.

- MP #23 (EGW 13) – a new borehole set up in end 2019 in the metamorphic rocks to the NW of the open pit. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.
  The laboratory analysis indicates that the tested parameters meet the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection except for one non-compliant assay from 08.06.2022 (elevated manganese levels).

- MP #24 (EGW 14) – a new borehole set up in end 2019 to the east of the ore stockpile. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.
  The point was dry during the four sampling campaigns in 2022 and therefore no samples for laboratory analysis were collected.

- MP #25 (EGW 15) – a new borehole set up in end 2019 to the west of the open pit. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.
  The laboratory analysis indicates that tested parameters meet the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection.

- MP #26 (EGW 16) – a new borehole set up in end 2019 to the west of the open pit. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.
  The laboratory analysis indicates that the tested parameters meet the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection except for some elevated levels of manganese and iron.
  The point was sampled only three times in 2022 because it was dry on 17.03.2022.

<u>Wastewater</u>

- Monitoring Point 27 (EWW 02) At discharge of the Wastewater Treatment Plant (for mixed wastewater types). Monitoring of water quantity and quality prior to discharge into the Krumovitsa River.
  No treated wastewater has been discharged into the Krumovitsa River in 2022. The Company has not been subject of any environmental sanctions or found non-compliant under the terms of issued Permits.

12. ASSESSMENT OF THE EFFICIENCY OF THE MONITORING NETWORK IN 2022

The current site monitoring design proves to be a good tool for characterization of the surface waters and groundwaters in the area of the Ada Tepe deposit and gives a good indication of any potential changes in the hydrodynamic and hydro chemical conditions. The review of the monitoring data brings the following conclusions about the efficiency of the monitoring system in 2022:

- The location of the listed monitoring points enables the assessment of waters' condition and potential impacts from the Krumovgrad operations.
- In addition the physio-chemical parameters for surface water, the following BQEs are also monitored at ESW 01, ESW 08, ESW 09 and ESW 10: Macrozoobenthos-based biotic index (Methods for Monitoring of Macrozoobenthos in Rivers as a Biological Element (Biotic and Trophic Index)) and IPS index for phytobenthos – diatom algae (Methods for Monitoring of Phytobenthos in Rivers as a Biological Element (IPS Index)). The results for 2022 are included in this Report.
- Elevated levels of certain elements (aluminum, manganese and iron) have been established in surface waters upstream of the open pit. DPMK undertook steps to identify the reasons thereof and contracted a team of experts to conduct research and determine the source or potential background levels upstream. The research was completed in 2022 and summarized results are presented in this Report;
- The collection of data about the static water levels continues monthly.
- In response to the requirements listed in MoEW letter # 26-00-552/28.06.2021, the Company drafted a *Methodology for implementing measures to establish the causes of detected pollution and deterioration of the water condition.* The 2022 was drafted with reference to the approach and measures listed in that methodology.
  For example: After the confirmation of non-compliant assays for petroleum products in the new groundwater piesometers and analysis of the causes for such exceedance, which was conducted by a certified hydrologist in 2020, the Company developed measures and took steps to clean the piesometers twice using purpose-built equipment. Cleaning campaign results indicated that the petroleum product levels dropped significantly and confirmed that the method was successful. This was also confirmed by 2021 and 2022 results showing that after established elevated levels and follow-up cleaning campaign of PP with dedicated equipment, these levels have gone down and are now within the thresholds set out in *Regulation 1/2010 on Groundwater Exploration, Use and Protection.*

13. CONCLUSION

The summary of the laboratory analyses conducted in 2022 and the review against the quality standards under Regulation No H-4/ 14.09.2012 on Surface Water Characterization (as amended from time to time) and the priority substances under Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants, and Regulation 1/2010 on Groundwater Exploration, Use and Protection, brings to the following conclusions:

Surface waters:

- Upper Krumovitsa (upstream the town of Krumovgrad), ESW 01 and ESW 02
  The physio-chemical indicators correspond to "excellent" quality for intermittent type of rivers (such as the Krumovitsa). There are elevated levels of aluminum, as per the quality standards for chemical elements and other substances in internally surface waters (regulated Annual Average Concentration (AAC) - environmental quality standards), stipulated in Regulation № H-4/ 14.09.2012 on Surface Water Characterization. The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants.
- Tributaries of the Krumovitsa River (Egrechka, Kessebirdere, Buyukdere and Kaldzhikdere), ESW 03, ESW 04, ESW 05 and ESW 06.
  In 2020, 2021 and 2022, the levels of the specific pollutant Aluminum (Al) exceeded the EQS in the entire Krumovitsa watershed. Highest values were established in the tributaries upstream of the Ada Tepe mine (Egrechka River and Kessebirdere). The levels in the rest of the tributaries (Buyukdere and Kaldzhikdere) were lower but still exceeded the regulated EQS. The levels gradually dropped down downstream of confluence with the Krumovitsa River; yet exceedances were recorded at both ESW 09 and ESW 10 near Krumovgrad.
  Internal monitoring results in 2016, 2016, 2017 and 2018, i.e. prior to the site's commissioning confirm this trend. Aluminum levels were below detection in some months and below the EQS in others, and yet there were months when they exceeded the EQS in most of the Krumovitsa watershed, e.g. in October 2017 and December 2018). Internal monitoring results show that DPMK's operations cannot be determined as a source of Al pollution. The most likely reason for elevated background levels of aluminum in the Upper Krumovitsa watershed is past anthropogenic activity. In 2022 Dundee Precious Metals Krumovgrad EAD voluntarily initiated a survey to establish any sources of pollution along the upper stream of the Krumovitsa River, upstream DPM's minesite. The Company assigned the survey to a team of experts and the survey itself was titled "Identifying the source of established elevated levels of certain elements (aluminum, manganese and iron) in surface waters in Upper Krumovitsa". The survey was a snapshot of the environmental quality in an area with specific characteristics, affected by past anthropogenic impacts from historic mining operations. The survey established some historic minesites (at the villages of Gorno Kameniane and Avren) which are probably not the only sources of elevated metal concentrations in the waters that as the internal monitoring shows have been registered both in the Avrenska River (Krumovitsa) and its tributaries (Egrechka, Kessebirdere, Kaldzhikdere and Buyukdere). At the same time, there are certain natural factors (serpentine areas) that might lead to higher concentrations of these elements and changes in the biological parameters (see Appendix 4).
  Dundee Precious Metals Krumovgrad EAD cannot and should not be held responsible for historic minesites operated in the past by other legal persons.
- Krumovitsa River (Lower Krumovitsa, 100 m upstream and downstream of discharge of untreated sewage from Krumovgrad), ESW 09 and ESW 10
  The physio-chemical indicators correspond to an "excellent" quality of most indicators and "good" quality for BOD5 and dissolved oxygen.
  There are elevated levels of aluminum, as per Regulation № H-4/ 14.09.2012 on Surface Water Characterization and the quoted quality standards for chemical elements and other substances for surface waters produced internally (AAV-EQS).

The assays were compliant with the MAC under the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants;
DPMK has set up a process wastewater treatment plant applying the reverse osmosis method. Treated process wastewater is discharged only in extreme weather events and continuous rainfall. No treated process wastewater was discharged to the environment in 2022. Onsite generated sewage is treated in a second domestic effluent treatment plant. Treated effluent reports back to the mining operation and included in its return water cycle, i.e. there is no discharge into the environment.

- Krumovitsa River (assessment of the ecological status of phytobenthos as a BQE)
  The assessment of the ecological status of phytobenthos as a BQE indicated a steady trend of a 'good' status in all the monitoring locations upstream and downstream of the mine site. On one hand, those data confirm there was no toxic pollution (phytobenthos is sensitive to it), but on the other it should be noted that the samples were collected in the high-water period in May, when the limits for physio-chemical parameters normally would not be exceeded. The phytobenthos life cycle is short, 20 to 30 days, and therefore the communities can recover quickly shortly after an occasional pollution episode provided that sufficient flow is available. That could explain the 'good' status of this BQE even downstream of the discharge from the Krumovgrad main sewers, although it is most sensitive to biogenic pollution. This conclusion indicates that despite the compliance with the BQE assessment methodology, additional samples must be collected during low flows in the summer period (before the river ceases to flow). The purpose is to collect sufficient information and data to reject all doubts and ensure tracking. In 2022 DPMK conducted a one-time sampling and analysis of phytobenthos as a BQE. A second sampling was scheduled but failed to take place, since the river was dry by November 2022.
- These conclusions confirm that Company mining operations have no negative impact on surface water quality.

Groundwater, as follows:

- A total of 16 monitoring boreholes, which are described in the approved Site Water Monitoring Plan, have been set up in the Ada Tepe area to assess the chemical status of the groundwaters there. All non-dry monitoring points were monitored in 2022.
- Groundwater quality in the monitoring locations is associated with the mineralogy of the specific strata intersected by each borehole, as well as strata that monitored flows go through before reporting to the MP. As evident from the information provided herein, the elevated levels established with certain metals might be a combined result of local mineralogy and drilling operations during MP set up. Elevated ion levels were most frequently identified for iron (Fe), manganese (Mn) and occasionally arsenic (As) and antimony.
- Continuous long-term monitoring of local groundwaters both before and after the minesite's commissioning has shown elevated concentrations of iron (Fe), aluminum (Al), manganese (Mg) ion and less often of petroleum products and arsenic (As) in different monitoring locations.
- The levels of certain elements such as Fe, Mn and As are expected to be naturally higher due to the fissure-flow type of the local groundwaters, and the infilling of fractures in the upper part of the metamorphic complex is naturally dominated by manganese and iron hydroxides. The elevated arsenic levels can be attributed to the pyritized carbon lenses in this complex and the subsequent oxidation processes, which may elevate the microelements of the pyrite association.

- Elevated ammonium levels in EGW01 are due to the fact that the monitoring point is in close proximity to farmland. Elevated levels are explained by the use of ammonium fertilizers.
- Data on rock geochemistry and the related chemical composition of local groundwaters was collected in 2021 and 2022. Survey results confirm conclusions made as of this date, i.e. that certain elements display elevated levels in groundwaters as a result of local mineralogy. The official statement of the conducted research is attached to this document (Appendix 5)
- The monitoring of the water abstractions for potable and domestic use did not indicate exceedances of the limits under Regulation #1/2010 on Groundwater Exploration, Use and Protection.
- These conclusions confirm that Company operations have no negative impact on the groundwater quality.

Wastewaters, as follows:

- No treated wastewater has been discharged into the Krumovitsa River in 2022.