# 2023 Water Monitoring Report Ada Tepe Prospect, Khan Krum Deposit

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## APPENDICES

# 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 2023 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.

# 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 till 04.03.2031;
- Water Body Use Permit #33140269/09.09.2021 for discharge of wastewater into surface waters to meet site operational demands, valid till 08.10.2027;
- Permit # 31190071/ 29.04.2020 for water abstraction from a surface water body (Arda River) for other purposes (exploration drills); its term has been with extended by subsequent Permit PP - 5343 / 26.09.2023, valid till 29.04.2033.

# 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 characterisation 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 of the Arda River. 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.

Water volumes abstracted in the period Jan. 1 to Dec. 31, 2023, are as follows:

- 5,252 m³ for drinking needs (digital water meter #D1T 500045 readings - 50 026 $m^3$ on 01.01.2023 and 51 345 $m^3$ on 04.05.2023. After a scheduled annual calibration, a new digital water meter was installed - #D1T 500046, with readings 185 585 $m^3$ - on 31.12.2023 – 189 518 $m^3$, at a permitted volume of 6,500 m³ per annum;
- for industrial purposes 91 278 $m^3$, as per the readings of digital water meter # D1T 500047 – 193 514 $m^3$ on 01.01.2023 and 246 822 $m^3$ on 19.06.2023. After a scheduled annual calibration, a new digital water meter was installed - #S51EOD19000, with readings 6.02 $m^3$ - readings on 31.12.2023 – 39 933 $m^3$ and 1957* $m^3$ subtracted from water meter #S51EOB19000 for "other purposes", at a permitted water volume of 127 000 $m^3$/ per annum;
- for other purposes 1 957 $m^3$, as per the readings of digital water meter # S51EOB19000, on 01.01.2023 - 6 570 $m^3$ and on 31.12.2023 - 8 527 $m^3$, at a permitted water volume of 18 750 $m^3$/ per annum.

Note: *Water consumption for 'other needs' from 01.01.2023 till 31.12.2023 was measured by water meter #S51EOB19000, installed on a diversion of the pressure pipeline for industrial water supply. The subtraction of 1 957 m³ from the readings of the industrial water digital meter was done to avoid the duplication of these volumes.

A Water Abstraction Declaration under art.194b of the Water Act was sent to the Plovdiv River Basin Directorate with outgoing letter # 0017/23.01.2024, and the due fees were paid by bank transfer to the River Basin Directorate on 07.02.2024.

**Surface Water Characterisation.**

The Ada Tepe minesite is situated to the left 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 uniform 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 waste water 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 parameters are:

- 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 and its tributaries belong to one water body - BG3AR200R009, of the same name - "Krumovitsa River and its 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, from the 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.

General Characterization of the River Flows of Krumovitsa - watershed area 497.6 km2; mean flow quantities 7,320 $m^3/s$, maximum flow quantities 15,100 $m^3/s$, and minimum flow quantities 2,827 $m^3/s$.

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

There are no municipal wastewater 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 River and its tributaries | R14b | River | good | good | good | good |

**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 shows good quantitative status of groundwater resources within the EACA. Two aquifers, BG3G00000NQ018 and BG3G00000NQ009, had a water exploitation index (WEI) above 60% (resource status risk). By end March 2024, the Plovdiv River Basin Directorate had still not published on its website its 2023 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 aforementioned 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 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 2023.

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

The site water quality survey in 2023 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<br>N 45. 86,770 | SW | see 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<br>N 412745,461 | SW | see Table 4-1-2 | Quarterly | Krumovitsa River upstream of Krumovgrad<br>Indicates surface water quality upstream of town discharges. |
| 3 | ESW 03 | 233 | E 38 69 38<br>N 45 86 342 | SW | see 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<br>N 45 86 646 | SW | see 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<br>N 45 88 680 | SW | see 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<br>N 4588202 | SW | see 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<br>N 45 89 777 | SW | see 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<br>N 4587708 | SW | see 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<br>N 4592512 | SW | see 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<br>N 4592681 | SW | see 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<br>N 4589517,6 | 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 and conglomerates. 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 | |

| Table 4-1.1: Water Monitoring Points | | | | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Name** | **Elevation (m)** | **Coordinates (WGS84)** | **Type** | **Quality Indicators** | **Sampling Frequency** | **Location, Description and Purpose** |
| 12 | EGW 02 | 312 | E 388103<br>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. 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<br>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 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, |
| | | | | | as provided in Table 4-1-2 | Quarterly | |
| 14 | EGW 04 | 229 | E 387596<br>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<br>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<br>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<br>N 4586750 | GW | as provided in Table 4-1-2 | Pursuant to the Water Abstraction Permit<br>(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<br>N 4587549 | GW | Water level | Monthly | A monitoring borehole (piezometer) high at Ada Tepe, a reference point upstream of the IMWF. It is set in a 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. |
| | | | | | as provided in Table 4-1-2 | Quarterly | |

| Table 4-1.1: Water Monitoring Points | | | | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Name** | **Elevation (m)** | **Coordinates (WGS84)** | **Type** | **Quality Indicators** | **Sampling Frequency** | **Location, Description and Purpose** |
| 19 | EGW 09 | n/a | E 388302<br>N 4587478 | GW | Water level<br>as provided in Table 4-1-2 | Monthly<br>Quarterly | 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. |
| 20 | EGW 10 | n/a | E 388392<br>N 4587262 | GW | Water level<br>as provided in Table 4-1-2 | Monthly<br>Quarterly | 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. |
| 21 | EGW 11 | 325 | E 385053<br>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<br>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<br>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<br>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<br>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<br>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<br>N 412836.999 | WW | Quantity<br>as indicated in Table 2-2.1. in the Waters Section, EMP | Continuous<br>Every month (upon actual discharge) | At discharge of the Wastewater Treatment Plant (for mixed wastewater types). The purpose of monitoring is to indicate the quality of the treated effluent before discharge to the Krumovitsa River (as needed). |

| Table 4-1.2: Surface and groundwater testing parameters | | |
|---|---|---|
| **Monitoring Point (MP)** | Assays | **Frequency** |
| All groundwater points (ESW 01 то 10) | 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 annum |
| All groundwater points (EGW 01 to 16) | As per *Appendix 1 of Regulation 1/10.10.2007 on Groundwater Exploration, Use and Protection.* | Quarterly by an accredited laboratory |
| EGW 7 (Fresh water abstraction well supplying the mine site) after treatment (chlorination) | Pursuant to *Regulation 9 on Drinking Water Quality** *November 2023 data has different scope to reflect the amended and supplemented Regulation 9/ 16. 03. 2001 on Drinking Water Quality (published in SG 43/ 16.05.2023). | Four times per annum, covering the parameters indicated in *Regulation 9*; Abstracted water volume |

Surface and groundwater samples were taken in March, May, August and November 2023, in line with the adopted Monitoring Plan. Samples were taken from all the monitoring points provided that they were wet. Appendix 2 presents maps of surface and groundwater monitoring points sampled for quality analysis in 2023. 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. Sampling and testing certificates are presented in Appendix 3 (digital copy). Static water levels were also measured and indicated.

The tests were conducted 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."

BQE monitoring: phytobenthos (IPS) and macrozoobenthos (BI) - twice in 2023:

- Stage one - June;
- Stage 2 when the river was low, but not dry– in mid-August.

# 5. MONITORING DURATION AND FREQUENCY

Four sampling campaigns were conducted by an accredited laboratory in 2023 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 current test results on water quality were reviewed against the regulated limits and are provided in addition in Appendix 3 (in digital format) for better clarity.

Surface water test results were compared to the values provisioned in *Regulation № H-4/ 14.09.2012 for Surface Water Characterization* (SG 67 /04.08.2023) and the *Regulation on*

*Environmental Quality Standards for Priority Substances and Some Other Pollutants.* (amended and supplemented in SG 97/11.12.2015).

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 shows test results for surface and groundwater monitoring points.

# 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;
- 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, May, August and November 2023. Samples were taken from surface waters from the Krumovitsa River and its tributaries, as well as from groundwaters, including drinking water abstractions before (and post) 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 2023. 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 (provided that 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 point of confluence 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. Results for the physical and chemical indicators show a predominantly '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 Characterisation show two cases of elevated aluminum levels.

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.

Sample data analysis and BQE analysis (for macrozoobenthos and phytobenthos) are presented in Appendix 5.

- 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.

Results for the physical and chemical indicators show a predominantly '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 Characterisation show a single case of 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 MP has been selected to monitor surface water quality in Upper Krumovitsa, i.e. upstream of Krumovgrad and was included in the new 2019 Water Monitoring Plan. Sample taking was done twice in 2023 - on 13.03.2023 and 03.05.2022. The MP was dry in August and November 2023 and hence no third and fourth samples were taken (certificates are presented in Appendix 3).

- MP #3 (ESW – 03 – Kessebirdere, 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. Results for the physical and chemical indicators show a predominantly '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 Characterisation show 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 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 is assessed as 'excellent' based on the quoted physical and 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. Two water samples were taken in 2023 since the MP was dry in August and November 2023. Test results show elevated aluminum levels, as per Regulation 4/ 14.09.2012. The water body status is assessed as predominantly "excellent" in terms of the set physical and chemical parameters.

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 winter because it was dry.

Results for the physical and chemical indicators show a predominantly '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 Characterisation show elevated aluminum levels and once case of elevated manganese 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 #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.

The MP was sampled twice during the reporting period, a third and fourth sample were not taken since it was dry.

Results for the physical and chemical indicators show '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 Characterisation show 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. Results for the physical and chemical indicators show a predominantly '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 Characterisation show elevated aluminum levels.

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

Analysis of BQE monitoring data for phytobenthos (IPS) and macrozoobenthos (BI) - twice in 2023 - is presented in Appendix 5.

- MP #9 (ESW 09) – Krumovitsa River 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 only three times in 2023, since it was dry in the summer time. Results for the physical and chemical indicators show '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 Characterisation show two single cases of elevated aluminum and manganese levels.

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

Analysis of BQE monitoring data for phytobenthos (IPS) and macrozoobenthos (BI) - twice in 2023 - is presented in Appendix 5.

- 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 MP was monitored three times only, since it was dry in the summer season.

Results for the physical and chemical indicators show '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 Characterisation show single cases of elevated aluminum and manganese levels.

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

Analysis of BQE monitoring data for phytobenthos (IPS) and macrozoobenthos (BI) - twice in 2023 - is presented in Appendix 5.

**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.

Data on static groundwater levels continued to be collected in 2023 and is provided in Appendix 3. 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) – Newly set up in end 2019.

It is located NE of the minesite and covers fissured groundwaters running towards the Krumovitsa River from Ada Tepe's NE slope. It is located in Eocene sandstones and conglomerates. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.

Water sample analysis shows some deviations regarding the following parameters: sodium, ammonium, iron and manganese from the quality standard under Regulation 1/2010 on Groundwater Exploration, Use and Protection.

- Well MP 12 (EGW 02).

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

In 2023 there were no deviations from groundwater quality standards, as per Regulation 1/2010.

- Borehole #13 (EGW 03) – newly set up in end 2019.

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 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.

Two deviations from the established quality standards were recorded in 2023 regarding the indicator for manganese.

- Borehole #14 (EGW 04) – newly set up in end 2019.

Set up in the metamorphic rocks of the slope descending to the Krumovitsa River terrace. Covers groundwater flowing south below the IMWF. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.

The quality standards under Regulation 1/2010 on Groundwater Exploration, Use and Protection were met in 2023.

- Pump Station MP 15 (EGW 05) for drinking and domestic water supply of the town of Krumovgrad.

Located in the alluvial sediments 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.

Only one minimal deviation from groundwater quality standards was established in 2023 regarding the indicator for phosphates.

- Pump Station MP 16 (EGW 06) for drinking and domestic water supply "Ovchari" - Krumovgrad– II

Located in the alluvial sediments 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 quality standards under Regulation 1/2010 on Groundwater Exploration, Use and Protection were met in 2023.

- Well MP 17 (EGW 07) for minesite water supply

Located in the alluvial sediments 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.

Tested indicators downstream the chlorinating system and UV sterilizer correspond to the maximum allowable limits under Regulation 9/ 16.03.2001, amended and supplemented in SG 43/ 16.05.2023.

Note: Tap water is not used for drinking purposes onsite Company premises. The Company provides bottled water instead.

- Borehole #18 (EGW 08) – newly set up in end 2019.

Located in the Ada Tepe area, at a high altitude. This is a reference point upstream the IMWF. 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 background levels in the groundwater flowing towards the IMWF.

Sampled three times in 2023 (the MP was dry in August). Tested indicators meet the quality standard set out in Regulation 1/2010 on Groundwater Exploration, Use and Protection, except for two non-compliant samples showing elevated phosphate levels (as was the case in past years).

- MP #19 (EGW 09) – It is a new borehole, which was completed at the end of 2019.

It is located at the toe of the IMWF North Valley between the North Sump and 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 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 elevated concentrations of sulphates and total hardness, similar to results from previous years.

- MP #20 (EGW 10) – It is a new borehole, which was completed at the end of 2019.

It is located at the toe of the IMWF South Valley between the South Sump and 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 this MP is to monitor groundwater quality 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 manganese values (lower than those in 2022) and a single elevated concentration of iron.

- Pump station MP 21 (EGW 11) for drinking and domestic water supply of the village of Zvanarka.

Water abstraction for water sources outside the footprint of 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 2023 indicates compliance with the provisions of Regulation 1/2010 on Groundwater Exploration, Use and Protection.

- Pump Station MP 22 (EGW 12) for drinking and domestic water supply of 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 2023 indicates compliance with the provisions of Regulation 1/2010 on Groundwater Exploration, Use and Protection.

- Borehole #23 (EGW 13) – newly set up in end 2019.

Located in 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 tested parameters meet the quality standards under Regulation #1/2010 on Groundwater Exploration, Use and Protection except for one single slightly elevated arsenic concentration in the March sample, two elevated concentrations of iron and three of manganese.

- Borehole #24 (EGW 14) – newly set up in end 2019.

Located east of the ROM Pad. 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 2023 and therefore no samples for laboratory analysis were collected.

- MP #25 (EGW 15) – It is a new borehole, which was completed at the end of 2019.

Located west of the open pit. The purpose of monitoring is to indicate the water quality of BG3G000PtPg049 – Fissure-Flow Groundwater, East Rohodope complex.

The quality standards under Regulation 1/2010 on Groundwater Exploration, Use and Protection were met in 2023.

- MP #26 (EGW 16) – It is a new borehole, which was completed at the end of 2019.

Located 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 except for some single elevated levels of manganese and iron.

The MP was sampled only three times in 2023 since it was dry in August.

**Wastewater**

- Wastewater Treatment Plant MP 27 (EWW 02) for the discharge of mixed wastewater.

Monitoring of water quantity and quality prior to discharge into the Krumovitsa River.

No treated wastewater has been discharged into the Krumovitsa River in 2023. 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 2023

The current site monitoring design proves to be a good tool for characterisation 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 2023:

- The location of the listed monitoring points enables the assessment of waters' condition and potential impacts from the Krumovgrad operations.
- In addition the physical and 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)). 2023 results are presented in an Appendix to this Report;
- Elevated levels of certain elements- aluminum and single cases of manganese have been established in surface waters upstream of the open pit. The Company 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 Ministry of Environment and Water and the Plovdiv River Basin Directorate were informed thereof by means of the Company's 2022 Report;
- Data collection regarding static water levels is conducted on a monthly basis;
- 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 2023 Report was drafted with reference to the approach and measures listed in that methodology.

For example: After establishing elevated levels of petroleum products in the newly set up groundwater piesometers and conducted source analysis by a hydrologist in 2020, the Company developed measures and took steps to double clean the piesometers with dedicated equipment. Cleaning campaign results indicated that the petroleum product levels dropped significantly and confirmed that the method was successful. This was also confirmed by 2021-2023 results showing that after establishing elevated levels and organizing a follow-up cleaning campaign of petroleum products 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

After summarizing 2023 analyses and comparing them against the quality standards listed in *Regulation No H-4/ 14.09.2012 on Surface Water Characterization* and priority substances, the following conclusions can be drawn as per the Regulation on Environmental Quality Standards for Priority Substances and Some Other Pollutants and Regulation 1/2010 on Groundwater Exploration, Use and Protection:

***Surface waters:***

- Upper Krumovitsa (upstream of the town of Krumovgrad), reference points ESW 01 and ESW 02

The physical and 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, 2022 and 2023, elevated levels of aluminum (Al) (a specific pollutant as per the endorsed EQS) were established in the entire Krumovitsa watershed, with highest values in its 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. An analogous trend was observed with manganese, with highest levels recorded in ESW 04 - Egrechka River – upstream of confluence with Kessebirdere.

The concentrations of these two elements decrease gradually after confluence with the Krumovitsa River. However, elevated levels were again recorded at both ESW 09 and ESW 10 near Krumovgrad.

This trend was also observed with internal monitoring results prior to the minesite's commissioning (2016 -2019). Aluminum levels were below detection levels 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 aluminum and manganese 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. Historic minesites (at the villages of Gorno Kameniane and Avren) established during the survey are probably not the only sources of elevated metal concentrations identified by the Company's internal monitoring 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. (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 physical and 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 an industrial wastewater treatment plant applying the reverse osmosis method. Treated industrial wastewater is discharged only in extreme weather events and continuous rainfall. No treated industrial wastewater was discharged into the environment in 2023. Onsite generated sewage is treated in a second domestic effluent treatment plant. Treated effluent then reports back to the mining operation and is re-used, i.e. there is no discharge into the environment.

- Krumovitsa River - BQE monitoring - phytobenthos (IPS) and macrozoobenthos (BI) - twice in 2023.

2023 data collected from the 5 monitoring points was analyzed by the Institute of Fisheries and Aquatic Sciences in Plovdiv, due to heavy workload and unavailability of the EEA (the only certified lab in Bulgaria under these parameters).

The data is presented in Appendix 5 - Consultancy services for the assignment: "Hydrobiological monitoring of macrozoobenthos and phytobenthos in 5 monitoring points of the Krumovitsa River Krumovitsa River (twice in 2023)"

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 2023.

- Groundwater quality in these monitoring locations is associated with their specific mineralogy. As evident from the information in this Report, elevated concentrations established with certain metals might be the combined result of the local mineralogy of the different rock layers. Elevated concentrations were most frequently established for iron (Fe), Manganese (Mn) and occasionally arsenic (As);
- 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 arsenic (As) in different monitoring points, which is related to the background characteristics of the groundwater flow;
- 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. Elevated arsenic concentrations can be attributed to the pyritization of carbon lenses in local Paleogene sediments and subsequent oxidation processes that may elevate pyrite associated micro-elements;
- Elevated ammonium levels in EGW01 are due to the fact that the monitoring point is located in close proximity to farmland. Elevated levels are explained by the use of ammonium fertilizers.
- Collected data on local geochemistry and its relatedness to the chemical composition of local groundwaters confirms current conclusions that certain groundwater elements have higher concentrations due to local rock mineralogy. The official statement of the conducted research is attached to this document (Appendix 4);
- 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 2023.