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1.0 INTRODUCTION

This report has been prepared by Dalradian Gold Ltd. (DGL) in response to Condition 1.I. of Discharge Consent 068/12/2, which requires quarterly water quality reporting. The consent relates to discharge of site drainage water (at Irish Grid Reference H 5707 8690) arising from the DGL advanced exploration project at Curraghinalt. The site is situated approximately 8 km to the east of the village of Gortin, County Tyrone, Northern Ireland, BT79 7SF.

2.0 SUMMARY OF OPERATIONS DURING THE REPORTING PERIOD

DGL are currently in the early stages of progressing advanced exploration at the Curraghinalt site, which includes re-activating historical underground workings and completion of a parallel drilling program. The work is progressing under Planning Permission K/2013/0072/F, and is aimed at collecting information that will support a Pre-Feasibility Study and an Environmental Impact Assessment to allow for development of a full mine.

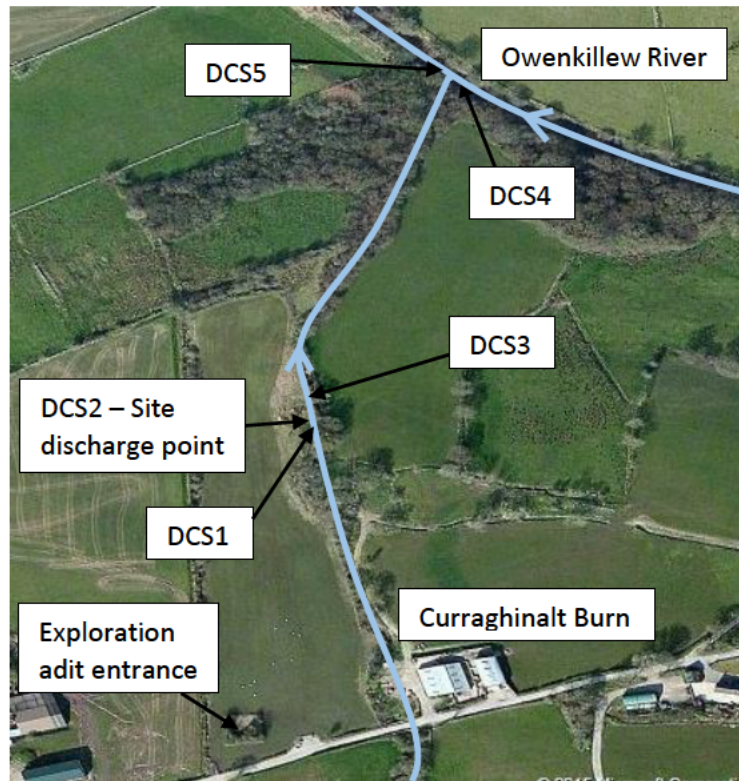
Water discharged via the consent during the reporting period has derived from natural groundwater drainage from the adit entrance, together with runoff water on the site that has resulted from incident rain and snowfall. Following capture and management of these sources, temporary treatment prior to discharge at the consent location includes passage through an oil interceptor and thereafter one of two dedicated filter presses. At present treatment is primarily focused on silt removal. DGL informed the Northern Ireland Environment Agency (NIEA) of the intention to commence the site discharge on 3 December 2014.

Current construction works on-going at the site include the development of offices, services and parking, a designated storage area for waste rock, and a formal water treatment facility. The latter is expected to be completed during the upcoming reporting period and will allow for additional treatment capacity as required as exploration progresses.

3.0 SAMPLING LOCATIONS, PROTOCOL AND LABORATORIES

Five surface water sample locations are required to be sampled monthly as part of the Discharge Consent. These have been listed below as Discharge Consent Sample 1 (DCS1) to Discharge Consent Sample 5 (DCS5) and are also presented on Figure 1.

- DCS1 - Immediately upstream of the confluence of the site discharge point and Curraghinalt Burn;
- DCS2 - Site discharge point;
- DCS3 - 5 m downstream of the confluence of the site discharge point and Curraghinalt Burn;
- DCS4 - Immediately upstream of the confluence of Curraghinalt Burn and the Owenkillew River; and
- DCS5 - 5 m downstream of the confluence of the Curraghinalt Burn and the Owenkillew River.



100m – approx. scale

Figure 1: Site map (Bing Maps) showing discharge consent sample locations

All surface water samples are collected according to protocols described in the DGL Surface Water Sampling Procedure¹. To help ensure quality results, care is taken not to disturb stream bed sediments upstream of the sampling point and prior to sampling. Samples are collected at all locations by a DGL Field Technician wearing a fresh pair of nitrile gloves and from the flowing stream of water to minimise any risks of contamination. All sample bottles are laboratory supplied and are filled to capacity at source.

Samples are placed in a cooler with ice, secured with sample packaging and accompanied by a completed Chain of Custody (CoC) Form, and shipped directly to [REDACTED] in Antrim for analysis. Thereafter, [REDACTED] to [REDACTED] in [REDACTED]. [REDACTED] is accredited by the United Kingdom Accreditation Service (UKAS) to 17025 standard, and UKAS monitor and externally audit the laboratory. All analyses that have been undertaken for comparison against discharge consent thresholds are reported as accredited on [REDACTED]. Additionally, [REDACTED] based in [REDACTED] have been utilised to support supplementary Quality Assurance/Quality Control (QA/QC) testing.

DGL have also introduced the measurement of pH in the field at each sample location during the reporting period. Regular calibration of the instrument used is undertaken on site using both pH 4.01 and pH 7.01 buffer solution and in accordance with DGL MultiParameter Meter Calibration Procedure². During readings, the pH probe is fully immersed at all times in the flowing stream of water and up until stabilisation occurs³.

¹ Dalradian Gold Ltd. 2013. Surface Water Sampling Procedure. Issued July 2013.

² Dalradian Gold Ltd. 2013. MultiParameter Meter Calibration Procedure. Issued July 2013.

³ Dalradian Gold Ltd. 2013. MultiParameter Meter Sampling Procedure. Issued July 2013.

4.0 RESULTS

During the reporting period DGL have collected a total of 30 water samples from the discharge consent locations. This is twice the number of samples required by the consent during the period, and amounts to six samples from each of the five locations described. Sampling was undertaken on 27 November 2014, 16 December 2014, 18 December 2014, 14 January 2015, 4 February 2015 and 11 February 2015. In total, eight batches of water samples were sent to two different laboratories.

It should be noted that the first sampling event was undertaken on 27 November and several days prior to commencement of the site discharge. At this time sample DCS2 was obtained from output from the filter press during trials. The additional sampling and analysis has been undertaken during set-up to provide confirmation that the system in place at the site can produce water that meets the consent requirements.

QA/QC checks and factual reporting against the consent water quality thresholds for the discharge point are presented in the following sub-sections. Water quality results and thresholds are summarised in Appendix A, and all laboratory certificates are presented in Appendix B.

4.1 Quality Assurance/Quality Control

A number of QA/QC measures have been applied to water samples taken at all sites. A factory calibration certificate for the HANNA HI9828 MultiParameter meter used to measure pH in the field is provided in Appendix C.

4.1.1 Chain of Custody and confirmation of parameter analysis

A CoC form was completed on each day of sampling and on eight separate occasions between 27 November 2014 and 11 February 2015. The CoC forms document possession of the samples from the time of sample collection to reception at the lab; provide primary instruction to the lab on the parameters to be analysed; and provide sample information relevant to the lab, such as sample name and sample date and time. Following each sampling event and prior to submission to the lab, the CoC was reviewed and checked for errors. In the events covered within the period there are no issues to report in this respect.

4.1.2 Holding times

In Standard Operating Procedure (SOP) No. QA 022 REV 0 'Preservation and Handling of Samples', [REDACTED] provide maximum holding or storage times for individual analytical parameters alongside sample container types to be used, analytical methods and validation references. In order to ensure holding times were not exceeded, DGL shipped samples directly to the laboratory. Certificates presented in Appendix B demonstrate that all samples were either received by [REDACTED] on the day of sampling (two occasions) or on the day after sampling (six occasions). Testing is recorded to have been scheduled for a standard 10 day turnaround time, and commenced on the day of sample receipt on two occasions and on the day following sample receipt on five occasions. On one occasion, for samples collected on 18 December 2014, analysis did not commence until 2 January 2015 (after 15 days). This delay reflects holiday opening times. There is no discernible bias between results from this monitoring event and the remaining data set, and in this respect all results are considered valid.

4.1.3 Field Blanks

A total of seven field blanks have been collected during the reporting period to assess potential contamination due to the sampling environment (e.g., dust getting into the sample bottle). Analysis of field blanks was undertaken alongside the specified water chemical analysis. Field blank results include total ambient conditions during samplings, but can also potentially incorporate bias due to laboratory methods (e.g., low-level constituents remaining in analytical equipment from a prior highly contaminated sample from another site) that are assessed by laboratory method blanks. The field

blanks incorporated deionised water supplied by the laboratory which theoretically should return no measurable values throughout the parameters analysed (with the omission of pH) unless there has been a source of contamination during sampling.

All blank determinants were below detection limits (Appendix A) with the exception of dissolved chromium in one sample (0.0002 mg/L), and dissolved copper and dissolved iron in another sample (0.001454 mg/L and 0.003 mg/L respectively). The dissolved chromium concentration detected equates to the actual [REDACTED] detection limit. The detected dissolved iron and dissolved copper are at very low concentrations determined in a sample sent to [REDACTED]. Both are well below the routine McQuillan detection threshold; since [REDACTED] to report a significantly lower resolution. Overall the low level detections reported in two blank samples are considered to be satisfactory.

4.1.4 Duplicate Samples

Four duplicate samples were collected during the reporting period. Three at the discharge point (DCS2) and one in the Curraghinalt Burn (DCS1). Analysis of two duplicate samples was undertaken by [REDACTED] alongside the remaining batch, and two were sent to [REDACTED] for independent testing.

The measure of the reproducibility or precision of the chemical analysis has been quantified by calculating the Relative Percentage Difference (RPD) between parameter concentrations on the split sample submitted as a blind duplicate. The RPD has been calculated as follows:

$$RPD\% = \frac{|S - D|}{\frac{1}{2}(S + D)} \times 100$$

Where:

RPD = Relative Percentage Difference

S = Sample value of parameter; and

D = Duplicate value of parameter

Theoretically, the samples should have identical chemical concentrations (i.e., RPD = 0). However, due to factors such as sample matrix heterogeneity, natural variations or variations due to sample collection, handling or analysis, a variation in chemical concentration may occur (i.e., RPD greater than 0). Moreover, the reproducibility of replicate analyses at concentrations near the method detection limit (MDL) can be poor, resulting in RPD values of greater than the desirable limits. Therefore, for duplicate concentrations greater than five times the detection limit, a relative percent difference value of $\pm 20\%$ is considered acceptable⁴. Given these considerations, for duplicate concentrations less than five times the detection limit, RPD has not been calculated.

An RPD value greater than the above project objectives suggests variability has been introduced through sample collection, sample handling, or sample analysis. Of the analysis undertaken, total hardness as CaCO₃ determined in the discharge point sample (DCS2) on 04/02/2015, in comparison to the associated duplicate, falls outside the 20% acceptable threshold. This value should be interpreted in a qualitative capacity only.

⁴ Zeiner, S.T. 1994. Realistic Criteria for the Evaluation of Field Duplicate Field Results. Proceedings of Superfund XV, November 29-December 1, 1994. Sheraton Washington Hotel, Washington, D.C.

4.1.5 Laboratory internal QA/QC

██████████ operate in accordance with SOP No. QA 017 REV 5 covering their 'Procedure for the Accepting and Rejecting of Quality Controls and Results'. This document covers the approach adopted to quality control and the criteria used for accepting and rejecting results.

BOD analysis on twelve samples has been reported by ██████████ as a 'sample deviation'. This has been due to the sample being over diluted in the laboratory. These results are considered to be indicative only (see Appendix A).

4.1.6 Summary

As detailed above, there are no major QA/QC concerns and all samples are considered applicable. Duplicate and blank samples collected also indicate a high level of data quality. There were a few minor detections in field blanks that resulted in no apparent bias in the water quality results. These are attributed to conditions during samplings and potentially bias deriving from laboratory procedures. A number of the BOD samples have been over diluted in the lab and are considered to be indicative only.

4.2 Factual Presentation of Data

All water quality results are presented in summary form for each location in Appendix A. This includes a comparison of concentrations from the discharge point location (DCS2) against specific threshold values detailed within the consent.

During the reporting period, all six sample results from DCS2 are below the threshold values presented within the consent for all parameters.

Water quality obtained from the Curraghinalt Burn during the period can be summarised as follows:

- All total suspended solids data are below 10 mg/L;
- All BOD concentrations are less than 2 mg/L;
- Laboratory measured pH varies between a minimum of 6.7 pH units (recorded at the upstream location) and a maximum of 7.46 pH units (recorded at the downstream location);
- Dissolved mercury, cadmium, copper and lead were always recorded to be below detection;
- Oil or grease has not been visible at the sample locations;
- The maximum dissolved iron concentration has been determined at 2.07 mg/L at the upstream location; and
- The maximum total hardness has been recorded as 49.4 mg/L at the downstream location.

Water quality obtained from the Owenkillew River during the period can be summarised as follows:

- All total suspended solids data are below 10 mg/L;
- All BOD concentrations are less than 2 mg/L;
- Laboratory measured pH varies between a minimum of 6.61 pH units (recorded at the downstream location) and a maximum of 7.15 pH units (also recorded at the downstream location);
- Dissolved mercury, cadmium, copper, chromium and lead were always recorded to be below detection;
- Oil or grease has not been visible at the sample locations;
- The maximum dissolved iron concentration has been determined at 1.05 mg/L at the upstream location; and
- The maximum total hardness has been recorded as 31 mg/L at both the upstream and downstream locations.

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Appendix A
Presentation of Water Quality Results

Appendix B
Laboratory Certificates

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Appendix C

HANNA MultiParameter Meter Calibration Certificate