Environment and Climate Change Canada | Environnement et Changement climatique Canada

Environmental Protection Operations Directorate
Prairie & Northern Region
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ECCC File: 6600 000 050/004
NWB File: 1BR-CUL1118

September 5, 2018

Via email at: licensing@nwb-oen.ca

Ida Porter
Licensing Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Dear Ms. Porter:

RE: 1BR-CUL1118 – Barrick Gold Inc. – Cullaton Lake Mine – Closure and Reclamation Plan

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Water Board (NWB) regarding the above-mentioned Plan and is submitting comments via email as requested by NWB. ECCC's specialist advice is provided based on our mandate, in the context of the *Canadian Environmental Protection Act*, and the pollution prevention provisions of the *Fisheries Act*.

The following comments are provided:

Closure and Reclamation Plan

1.

Reference

- Section: 5.2.2.3 Post-Reclamation Geochemistry and Contact Water Quality
- Section: 5.2.2.4 Post-Reclamation Water Quality in the Receiving Environment

Issue

Barrick Gold (the Proponent) states that:

> "*Discharge of seepage water from the EWR to surface has not been observed to date. Therefore, there is no water quality data for the EWR.*
> *A thin veneer of scattered oxidized waste rock remains on the surface of the former Shear Lake mine site. Following reclamation, pools of low pH water have been observed in the vicinity of the residual waste rock. The low pH pools are not hydraulically connected (i.e., are unrelated) to the EWR and are therefore more likely a result of residual waste rock.*"

Furthermore, the Proponent states in Section 5.2.2.4:

> "*Drainage from the waste rock area reports to Shear Lake, then Shear Creek, and eventually to the Kognak River. Monitoring points that are considered background reference sites are located upstream of Shear Lake and presumably do not have potential for mine derived point source influences to water quality. These locations include two un-named streams (SW2 and SW32) that flow into Shear Lake as well as an un-named lake (SW27). Several sampling locations were also included within Shear Lake itself (SW7, SW25, and SW26). Sampling station locations are presented on Figure 3-3, Figure 5-3, and Figure 5-4*."

Given the location and proximity of the encapsulated waste rock (EWR) to Shear Lake, there may be potential for groundwater discharge from the EWR to the lake through the active layer during the warm months. In addition, given the statements by the Proponent in sections 5.2.2.3 and 5.2.2.4, it is not clear where the source of the low pH pool of water is given that it is not hydraulically connected to the EWR facility.

Furthermore, on Figure 5-4, the site map that shows sampling locations, there is no sample location between the EWR and Shear Lake, nor is there is a monitoring well between the EWR and Shear lake that would verify any groundwater seepage into the lake.

Recommendation

ECCC recommends that the Proponent clarify the following:

a) The source of the low pH pool of water
b) If there is a sample location or monitoring well between the EWR and Shear lake, and;
c) If there is no monitoring station between the EWR and Shear Lake, how has or will the Proponent determine that there is or has not been seepage into Shear Lake.

2.

Reference

- Section 5.2.6 Predicted Residual Effects
- Existing Conditions Report and Screening Level Aquatic Ecological Risk Assessment for the Cullaton Lake Mine Site

Issue

The Proponent states that:

> "*Some contact water from the EWR, residual waste rock, and the deactivated diversion berm can be expected to report to Shear Lake and/or Shear Creek. Testing by Lorax in 2008 (AECOM, 2009) indicated that the quality of the waste rock contact water is not expected to degrade, and eventually will improve as the sulphide in the rock becomes exhausted. Water quality monitoring (Figure 3-4) showed that between 2001 and 2016, the water quality in Shear Creek (i.e., downstream form the waste rock), has not degraded*.
>
> *Monitoring since 2001 has shown that the seepage is limited to a brief period post-freshet (i.e., July) and that the quantity and quality of the seepage is readily assimilated within the ultimate receiving environment of the Kognak River. Since there have been no indications that the water quality has degraded over the last decade, no adverse effects on water quality or aquatic biota is expected (PECG, 2017).*"

It is not clear what is intended by the statement "***the quantity and quality of the seepage is readily assimilated within the ultimate receiving environment of the Kognak River***". The 2009 Ecological Risk Assessment report for the Cullaton Lake Mine Site found several species of fish in Shear Lake. Section 36 (3) of the *Fisheries Act* prohibits the deposit of deleterious substances of any type in waters frequented by fish. Does the referenced statement mean that seepage from the EWR is entering the Kognak River, and/or that the Proponent does not consider Shear Lake the receiving environment?

Recommendation

ECCC recommends that the Proponent clarify what is intended by the statement "***the quantity and quality of the seepage is readily assimilated within the ultimate receiving environment of the Kognak River***" and whether or not the Proponent considers Shear Lake the receiving environment.

Should it be determined that there is seepage from the EWR into Shear Lake, ECCC recommends that the Proponent consider the addition of a groundwater monitoring well and/or water quality samples in Shear Lake near the EWR, to determine the extent of the seepage from the EWR to Shear Lake.

Should you require further information, please do not hesitate to contact me at (867) 669-4744 or Eva.Walker@canda.ca.

Sincerely,

[*Original signed by*]

Eva Walker
Environmental Assessment Coordinator

cc: Melissa Pinto, Senior Environmental Assessment Coordinator
Georgina Williston, Head, Environmental Assessment North (NT and NU)
ECCC Review Team