



7th Floor - 4922 48th Street,
P.O. Box 2130, Yellowknife NT X1A 2P6

Tel: 867-669-0506 Fax: 867-873-6610
www.mvlwb.com

Staff Report

Applicant: Canadian Zinc Corporation	
Location: Prairie Creek, NT	File Number(s): MV2021D0005
Date Prepared: June 18, 2021	Date of Board Meeting: July 15, 2021
Subject: Further Studies Requested	

1. Purpose

The purpose of this Report is to present to the Mackenzie Valley Land and Water Board (MVLWB/the Board) a request to consider invoking paragraph 22(2)(b) of the Mackenzie Valley Land Use Regulations in order to require further studies or investigations be made for Canadian Zinc Corporation's (CZN) new Type A Land Use Permit (Permit) Application MV2021D0005.

2. Background

- March 11, 2021 – New Permit and Water Licence (Licence) MV2021L2-0004 Applications received;
- March 19, 2021 – Applications deemed incomplete;
- May 27, 2021 – Revised Permit and Licence Applications received;
- June 4, 2021 – Applications deemed complete and review commenced;
- **July 15, 2021 – 22(2)(b) Request presented to the Board for decision;**
- July 15, 2021 – Comments and recommendations on the applications due;
- July 16, 2021 – End of 42-day timeline for Permit MV2021D0005; and
- July 29, 2021 – Responses due.

3. Discussion

Project History

The Prairie Creek Mine has a long history dating back to the 1960s. From 1966 to the mid-eighties, Cadillac Resources did significant exploration work at the site, and developed mine infrastructure, but shut down prior to mining and operating the mill. CZN has owned and operated the site since 1991.

Since that time, the site has been in a state of care and maintenance. CZN has held various Permits and Licences for Prairie Creek Mine. The activities authorized at Prairie Creek Mine include construction and maintenance of a temporary winter road followed by an All-Season Road that would connect the Liard Highway to Prairie Creek Mine (not yet constructed); mineral exploration (CZN is currently undertaking mineral exploration); and mining and milling (CZN has not yet started mining and milling).

History of Mining and Milling Authorizations

In 2008, CZN submitted applications for Type A Permit MV2008D0014 and Type A Water Licence MV2008L2-0002 for mining and milling. The 2008 applications were the subject of Environmental Assessment (EA) EA0809-002, which was approved by the Minister of the Government of the Northwest Territories Department of Environment and Natural Resources (GNWT-ENR) on June 8, 2012. Permit MV2008D0014 was then issued for a term of five years, and was granted a two-year extension, expiring June 16, 2020. Licence MV2008L2-0002 was issued on September 24, 2013 for a term of seven years, expiring on September 23, 2020.

On May 13, 2020, CZN submitted renewal Applications for the Licence MV2008L2-0002 and Permit MV2008D0014 as the authorizations were expiring on September 23, 2020 and June 16, 2020, respectively. As part of the applications, CZN indicated they had not entered into production due to challenging capital markets and sought to renew Licence MV2008L2-0002 and Permit MV2008D0014 to keep the mine authorized while they conducted an analysis of the project to improve financial attractiveness. CZN indicated this would allow them to prepare for new and longer-term application that would incorporate an updated project description and mine plan based on the project analysis. The renewed Permit (MV2020D0007) and Licence (MV2020L2-0003) were issued on December 29, 2020 and February 16, 2021, respectively. These were both issued for five-year periods.

Description of Applications

On March 11, 2021, CZN submitted new Applications for Permit MV2021D0005 and Licence MV2021L2-0004 to conduct surface and underground mineral exploration and mining and milling at the Prairie Creek Mine, NT (attached). CZN's intent is for the new Applications to replace the existing authorizations. These applications were deemed incomplete on March 19, 2021.

CZN submitted revised applications on May 27, 2021. CZN included an updated project description based on a project analysis they conducted. The updated project description describes an expanded project from what was contemplated as part of previous applications, and subsequently contains additions that have not been screened. In general, the expanded project is to support higher mining and milling rates to make the project more financially viable to account for increased capital and operating costs. Increased mining and milling rates would increase the amount of ore (metal containing minerals) extracted, and increase in the rate in which metal concentrates are produced. This would also increase the amount and rate in which waste products are produced (waste rock and tailings). CZN provided a table in their project description that compares the project in 2013 terms to the expanded project currently envisioned and applied for as part of these new Applications. This information is reproduced in Table 1 below.

Table 1: Summary Table Comparing the Project in 2013 Against the Expanded Project Being Applied for in 2021 (adapted from CZN project description, p. 15)

Mining Activity	2013 Project (values are approximate)	2021 Expanded Project (values are approximate)
Main mine access	<ul style="list-style-type: none"> • 870 portal 	<ul style="list-style-type: none"> • No change
Amount of ore processed	<ul style="list-style-type: none"> • ~1,600 tonnes/day 	<ul style="list-style-type: none"> • ~ 2,400 tonnes/day
Mill	<ul style="list-style-type: none"> • Same footprint as at present 	<ul style="list-style-type: none"> • No change
Concentrate Storage	<ul style="list-style-type: none"> • One very large shed 	<ul style="list-style-type: none"> • No shed
Concentrate Transport	<ul style="list-style-type: none"> • Assumed up to 70 outbound trucks/day on the winter road • Concentrate storage shed needed for storage over summer/fall • Concentrate in bags 	<ul style="list-style-type: none"> • Average ~18 outbound trucks per day on the all-season road • No need for concentrate storage shed • Concentrate in sealed containers
Supplies Storage	<ul style="list-style-type: none"> • Three warehouses 	<ul style="list-style-type: none"> • Double size of existing cold storage shed
Waste Rock Pile	<ul style="list-style-type: none"> • 1.3 million tonnes (755,000 tonnes waste rock, 545,000 tonnes DMS rock) • Expansion had been expected in the future with a longer mine life 	<ul style="list-style-type: none"> • ~5 million tonnes (2 million tonnes waste rock, 3 million tonnes DMS rock) • Will be in the same location as for 2013
Run-of-Mine Ore Stockpile	<ul style="list-style-type: none"> • 40,000 tonnes initially and 5,000 tonnes longer-term 	<ul style="list-style-type: none"> • ~140,000 tonnes at peak storage requirement
Tailings Stockpiles	<ul style="list-style-type: none"> • 10,000 tonnes in the Paste Backfill Plant • Up to 50,000 tonnes in the Water Storage Pond 	<ul style="list-style-type: none"> • ~24,000 tonnes in the Paste Backfill Plant • ~190,000 tonnes secondary stockpile at peak storage requirement • Up to 50,000 tonnes in the Water Storage Pond as a contingency
Camp size (operations)	<ul style="list-style-type: none"> • 120 people onsite at any one time 	<ul style="list-style-type: none"> • Up to 180 people onsite at any one time
Fuel	<ul style="list-style-type: none"> • Diesel 	<ul style="list-style-type: none"> • Primarily natural gas (LNG and/or CNG)
Initial Mine life	<ul style="list-style-type: none"> • 14 years 	<ul style="list-style-type: none"> • 15 years

Management Plans

The following documents and management plans were included with the Applications (attached):

- Aquatic Effects Monitoring Program Design Plan
- Closure and Reclamation Plan
- Consolidated Project Description (including RECLAIM Closure Cost Estimate)
- Cover Letter and Engagement Log
- Engagement Plan
- Effluent Quality Criteria Report
- Preliminary Screening Impacts and Mitigations Table
- Spill Contingency Plan
- Supporting Information (Final Prairie Creek Mine Dewatering Simulations, Effluent Model Spreadsheets, Water Storage Pond Feasibility Design)
- Tailings and Backfill Management Plan
- Waste Management Plan
- Waste Rock and Ore Storage Management Plan
- Water Management Plan

Engagement

On October 9, 2020, the Board approved CZN's [Engagement Plan](#) with the issuance of the current Licence (MV2020L2-0003) and Permit (MV2020D0007) on an interim basis. An [Engagement Record](#) and [Engagement Plan](#) were included with the new Applications (attached). CZN noted they engaged with the following Parties, which is consistent with previous submissions:

- Nahᓇ Dehé Dene Band (NDDDB)
- Łíídlı́ Kúé First Nation (LKFN)
- Acho Dene Koe First Nation (ADKFN)
- Tthets'ehk'edeli First Nation (Jean Marie River)
- Sambaa k'e First Nation
- Fort Simpson Métis Nation
- Pehdzéh Kí first Nation
- Dehcho First Nations

CZN conducted engagement for these Applications between November 6, 2020 and February 26, 2021 through the distribution of letters and facsimile. Each party was contacted at least twice during this time period.

On November 6, 2020, CZN held a workshop to explain the expanded project. Representatives from NDDDB, LKFN, and AKDFN attended the workshop, along with representatives from the GNWT-ENR, the GNWT Department of Lands (GNWT-Lands), representatives from the Mackenzie Valley Review Board, and Land and Water Board staff.

From the Engagement Record, technical questions and comments were raised by various parties. CZN indicated that they incorporated this information into the project description submitted with the Applications. Ttjets'ehk'edeli First Nation and Samba k'e First Nation expressed support for the Applications.

Type of Area

This Project is in a non-federal area surrounded by the Nahanni National Park Reserve.

4. Comments

Description of Further Study Request

In accordance with section 22(2) of the Mackenzie Valley Land Use Regulations, the Board would need to make a decision on the Permit MV2021D0005 Application within 42 days of receipt of the complete application, which would be July 16, 2021. In accordance with section 41(2)(a) of the Waters Act, a public hearing is required for any Type A proceeding, unless no intervenors are identified on or before the tenth day before the scheduled hearing and the applicant consents in writing to the disposition of the matter without a public hearing as per section 41(3)(a) of the Waters Act.

Section 22(2) of the MVLUR reads as follows:

- 22 (2) Subject to sections 23.1 and 24, if the Board does not return an application under paragraph (1)(a), it shall, within 42 days after receipt of the complete application,*
- (a) issue a Type A permit, subject to any conditions included pursuant to subsection 26(1);*
 - (b) conduct a hearing under section 24 of the Act or require that further studies or investigations be made respecting the lands proposed to be used in the land-use operation and notify the applicant in writing of the reasons for the hearing, studies or investigations;***
 - (c) refer the application to the Mackenzie Valley Environmental Impact Review Board under subsection 125(1) or paragraph 126(2)(a) of the Act for an environmental assessment and notify the applicant in writing of its referral and of the reasons for the referral; or*
 - (d) if a requirement set out in section 61 or 61.1 of the Act has not been met, refuse to issue a permit and notify the applicant in writing of its refusal and of the reasons for the refusal.*

In order to allow the Board, Parties, and CZN to review and discuss recommendations on the Applications, Board staff suggest that the Board assess the Permit and Licence Applications together. Additional information, further studies, or investigations are required respecting the lands proposed to be used in the land use operation. These include an updated assessment of activities proposed as they are directly linked to both land and water activities, and ultimately security. This includes those associated with construction [new infrastructure, alterations to existing infrastructure (tailings, water management), alterations to energy sources (compressed natural gas)], maintenance of existing and new site infrastructure (roads, bridges, buildings), operation of the mine, surface and underground exploration, implications to water management, and closure and reclamation of site components. In order to allow a procedurally fair process, review of all land use activities in concert with water use and waste deposits through the Type A Water Licensing process is recommended.

The time required to obtain the additional information described above will facilitate the concurrent review and processing of the Licence and Permit Applications.

5. Security

Part C, Condition 1 and Schedule 2 of CZN's existing Licence requires a security deposit totaling \$13,530,000 over phased installments based on the effective date of the Licence, at intervals prior to the extraction of waste rock, and prior to commencing milling. Condition 31 of CZN's existing Permit requires a security deposit of \$250,000.00. CZN submitted an updated closure cost estimate with these new Applications (attached). Security will be reassessed during the proceeding.

6. Conclusion

Board staff conclude that there are clear linkages between Permit MV2021D0005 and Licence MV2021L2-0004, including potential environmental impacts and mitigation measures. In order to develop Permit and Licence conditions that will effectively mitigate impacts of the proposed Project on the land, the Board could assess the Permit and Licence Applications together.

7. Recommendation

Board staff recommend the Board **make a motion to invoke paragraph 22(2)(b) of the Mackenzie Valley Land Use Regulations** for the Application of Land Use Permit MV2021D0005 to allow for additional time to gather information with the associated Type A Water Licence MV2021L2-0004 Application.

A draft decision letter is attached.

8. Attachments

- [Permit Application](#)
- [Licence Application](#)
- [Project Description \(including RECLAIM Closure Cost Estimate\)](#)
- [Cover Letter and Engagement Log](#)
- [Engagement Plan](#)
- [Spill Contingency Plan](#)
- [Waste Management Plan](#)
- [Tailings and Backfill Management Plan](#)
- [Waste Rock and Ore Storage Management Plan](#)
- [Explosives Management Plan](#)
- [Contaminant Loading Management Plan](#)
- [Aquatic Effects Monitoring Program Design Plan](#)
- [Water Management Plan](#)
- [Closure and Reclamation Plan](#)
- [Closure Cost Estimate](#)

- [Preliminary Screening Impacts and Mitigations Table](#)
- [Site Figure](#)
- [Water Storage Pond Feasibility Design \(2012\)](#)
- [Effluent Quality Criteria Report](#)
- Supporting Information:
 - [Final Prairie Creek Mine Dewatering Simulations](#)
 - [Effluent Model Spreadsheet \(except As and Zn increased effluent\)](#)
 - [Effluent Model Spreadsheet \(including As and Zn increased effluent\)](#)
 - [2012 Water Storage Pond Feasibility Design](#)
 - [2010 Water Storage Pond Preliminary Design Report](#)
 - [2014 Water Storage Pond Feasibility Design](#)
- [Incomplete Letter](#)
- [Response to Incomplete Letter](#)
- Draft Decision Letter from the Board

Respectfully submitted,



Andrew Wheeler
Regulatory Specialist



Kim Murray
Regulatory Specialist