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## Preliminary Screening Determination and Reasons for Decision

<b>File Number</b>	Type A MV2021L2-0004 and Type A MV2021D0005
<b>Company</b>	Canadian Zinc Corporation
<b>Project</b>	Prairie Creek Mine
<b>Location</b>	Prairie Creek, NT
<b>Activity</b>	Mining and mineral exploration
<b>Date of Decision</b>	August 26, 2021

### 1.0 Decision

In accordance with subsection 124(1) of the *Mackenzie Valley Resource Management Act* (MVRMA), the Mackenzie Valley Land and Water Board (Board) met on August 26, 2021 to make a preliminary screening determination on the Applications from Canadian Zinc Corporation (CZN) (Applicant) for Land Use Permit MV2021D0005 (Permit)<sup>1</sup> and Water Licence MV2021L2-0004 (Licence)<sup>2</sup> for the Prairie Creek Mine and mineral exploration activities (Project).<sup>3</sup>

Upon review of the applications and the consolidated project description, the Board has determined that some Project activities and areas are exempt from preliminary screening, because they were previously screened or underwent an Environmental Assessment (EA). The Applicant has, however, proposed new Project activities and areas of operations.

The Board has decided not to refer the proposed changes to the Project to the Mackenzie Valley Environmental Impact Review Board (the Review Board) for Environmental Assessment because, based on

<sup>1</sup>See MVLWB Online Registry [www.mvlwb.com](http://www.mvlwb.com) for [Canadian Zinc Corporation – Permit Application – May 27, 2021](#).

<sup>2</sup>See MVLWB Online Registry [www.mvlwb.com](http://www.mvlwb.com) for [Canadian Zinc Corporation – Licence Application – May 27, 2021](#).

<sup>3</sup> The Project is the Prairie Creek Mine, which is the proposed development, where “development” is defined in Part 5 of the MVRMA as:

“any undertaking, or any part or extension of an undertaking, that is carried out on land or water and includes an acquisition of lands pursuant to the *Historic Sites and Monuments Act* and measures carried out by a department or agency of government leading to the establishment of a park subject to the *Canada National Parks Act* or the establishment of a park under a territorial law.”

the evidence, it is the Board’s opinion that the proposed changes to the Project will not have a significant adverse impact on the environment or be a cause of public concern.

The Board’s determinations, including reasons for its decisions, are detailed in sections 3 and 4.

## 2.0 List of Defined Terms and Acronyms

ADKFN	Acho Dene Koe First Nation
Applicant	Canadian Zinc Corporation
Applications	The complete application package submitted by the Applicant for Water Licence MV2021L2-0004 and Land Use Permit MV2021D0005.
Board	Mackenzie Valley Land and Water Board
DFN	Dehcho First Nations
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
FSMN	Fort Simpson Métis Nation
GNWT	Government of the Northwest Territories
GNWT-ENR	Government of the Northwest Territories – Environment and Natural Resources
GNWT-Lands	Government of the Northwest Territories – Lands
LKFN	Łíídlı́ Kúé First Nation
MVLWB	Mackenzie Valley Land and Water Board
MVRMA	<i>Mackenzie Valley Resource Management Act</i>
Minister	Minister of the Government of the Northwest Territories – Environment and Natural Resources (GNWT-ENR)
NDDB	Nahᓃą Dehé Dene Band
ORS	Online Review System ( <a href="http://www.onlinereviewsystem.ca">www.onlinereviewsystem.ca</a> )
Party	As per the MVLWB <a href="#">Rules of Procedures</a> , an applicant, a person, or an organization participating in the regulatory proceeding for the Applications.
PC	Parks Canada
PKFN	Pehdzéh Kǰ First Nation
Project	Prairie Creek Mine and mineral exploration activities, which is the proposed development (as defined in Part 5 of the MVRMA). <sup>4</sup>
Review Board	Mackenzie Valley Environmental Impact Review Board
SKFN	Sambaa k’e First Nation
Standard Licence Conditions	MVLWB <a href="#">Standard Water Licence Conditions Template</a>
Standard Permit Conditions	MVLWB <a href="#">Standard Land Use Permit Conditions Template</a>
TFN	Ttjets’ehk’edeli First Nation

<sup>4</sup> “development” is defined in Part 5 of the MVRMA as:

“any undertaking, or any part or extension of an undertaking, that is carried out on land or water and includes an acquisition of lands pursuant to the *Historic Sites and Monuments Act* and measures carried out by a department or agency of government leading to the establishment of a park subject to the *Canada National Parks Act* or the establishment of a park under a territorial law.”

### **3.0 Background and Scope of Screening**

#### Project History

The Prairie Creek Mine dates to the 1960s. From 1966 to the mid-eighties, Cadillac Resources did significant exploration work at the site and developed mine infrastructure, shutting 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, authorized under various Permits and Licences. 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<sup>5</sup>, 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 due to expire 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 keep the mine licenced and permitted while they conducted an analysis to improve financial attractiveness. CZN indicated this would allow them to prepare for new and longer-term applications under an updated project description and mine plan. 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 terms.

#### History of Mineral Exploration Authorizations

Since the enactment of the *Mackenzie Valley Resource Management Act* (MVRMA) in 1999, CZN has held several authorizations for surface and underground mineral exploration. Multiple EA's have been conducted for surface and underground exploration activity: EA00-002, EA01-003, and EA0405-002.<sup>6 7 8</sup>

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<sup>5</sup> See Review Board Online Registry ([www.reviewboard.ca](http://www.reviewboard.ca)) for [Report of Environmental Assessment and Reasons for Decision EA0809-002 Canadian Zinc Corporation Prairie Creek Mine](#).

<sup>6</sup> Review Board EA00-002 [Report of Environmental Assessment on the Canadian Zinc Corporation Phase I Mineral Exploration Drilling Program, May 7, 2001](#)

<sup>7</sup> Review Board EA01-003 [Report of Environmental Assessment on the Canadian Zinc Corporation Phase II Mineral Exploration Drilling Program, October 25, 2001](#)

<sup>8</sup> Review Board EA0405-002 [Reasons for Decision and Report of Environmental Assessment on the Canadian Zinc Corporation Phase III Drilling Program, December 22, 2005](#)

EA0405-002 was approved by the Minister of Indigenous and Northern Affairs Canada on February 3, 2006.<sup>9</sup> <sup>10</sup> Decline development was assessed under EA01-002. The Review Board released its report for EA01-002 on February 6, 2002 and a review of the final measures was released at a later date.<sup>11</sup> <sup>12</sup>

Historically, CZN has held separate authorizations for surface and underground exploration. In 2020, they amalgamated both activities into one Water Licence (MV2019L2-0006) and one Land Use Permit (Permit, MV2020C0008); Licence MV2019L2-0006 was amended on September 2, 2020 to include surface exploration, and this was accompanied by the issuance of a new Permit MV2020C0008 that authorized both surface and underground exploration. The current authorizations enable the following:

- development of an additional underground decline;
- surface exploration at 60 sites via diamond drilling; and
- treatment of mine water emanating from the 870-m portal, which includes water from mine development conducted prior to CZN's acquisition of the Prairie Creek Mine, and water from the decline developed in 2006 and 2007.

In 2006 and 2007, CZN completed a development program that involved the rehabilitation of underground workings that were developed prior to CZN acquiring the Prairie Creek Mine, and the development of a new 600-meter-long decline tunnel from the existing 870-meter (m) portal (870-m above sea level). Following construction of the new decline, CZN also conducted underground mineral exploration by drilling within the decline. Most recently, CZN conducted surface exploration activities in the fall and winter of 2020.

### Description of Applications

On March 11, 2021, CZN submitted Type A Licence (MV2021L2-0004) renewal and new Type A Permit (MV2021D0005) Applications to conduct surface and underground mineral exploration and mining and milling at the Prairie Creek Mine, NT. The authorizations, if issued, would combine all mining and mineral exploration activities into one Licence and one Permit. CZN included an updated project description based on a project analysis they conducted. CZN's intent is to replace the existing mineral exploration and mining and milling authorizations.

The Consolidated Project Description describes an expanded project from what was contemplated as part of previous applications. The expanded project would increase the mine life from 14 to 15 years and result in increased mining and milling rates to account for increased capital and operating costs. Main access to the underground mine would remain at the 870-meter portal. The method of mining remains unchanged: ore (minerals containing metals) will be removed from underground and processed in the Mill to separate metal concentrates (desired product) from waste products, such as waste rock and tailings which is

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<sup>9</sup> Minister [Accepting EA0405-002, dated February 3, 2006](#)

<sup>10</sup> See the Review Board's [Public Registry for EA0405-002](#)

<sup>11</sup> Review Board EA01-002 [Report of Environmental Assessment, Canadian Zinc Corporation, Underground Decline and Drilling and Metallurgical Pilot Plant Developments, February 6, 2002](#)

<sup>12</sup> Review Board EA01-002 [Reconsideration of Environmental Assessment Reasons for Decision](#)

subsequently generated. Once processed, the metal concentrates will be transported to the Liard Highway via the All-Season Road, where it is then transported for further processing. As before, the mining process will require the management and treatment of water emanating from underground. Site infrastructure will include support facilities for construction, operations, and closure, as follows: waste rock piles, tailings storage, water storage ponds, water treatment, personnel camps, supplies storage, and fuel storage. Generally, the increased mining and milling rates proposed as part of the expanded project would increase the rate at which ore is extracted, increase the rate metal concentrates are produced, and increase the amount of waste and the rate in which waste products are produced.

The Applications were deemed incomplete on March 19, 2021. CZN submitted revised Applications on May 27, 2021, which were deemed complete and distributed for public review on June 4, 2021.

The Applications do not include the All-Season Road for which a separate Environmental Assessment was conducted (EA1415-01<sup>13</sup>), and which is authorized separately; however, alterations from the expanded project are linked to the use of the All-Season Road. This is discussed further below.

The Applications include proposed changes to the Project. Under Part 1, Schedule 1, section 2.1 of the Exemption List Regulations to the MVRMA, project areas and activities that have already been subject to Part 5 of the MVRMA are exempt from preliminary screening. The new Project activities and areas require screening by the Board in accordance with subsection 124(1) of the MVRMA.

In accordance with paragraph 125(1)(a) of the MVRMA, the Board must conduct a preliminary screening of any proposed changes to the Project which are not exempted from screening. The required preliminary screening will determine and report to the Review Board whether, in the Board's opinion, the proposed changes to the Project might have a significant adverse impact on the environment, or might be a cause of public concern. The details of the Board's analysis are set out below.

### Engagement

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

- Nahąą Dehé Dene Band (NDDDB)
- Łíídlıı Kúé First Nation (LKFN)
- Acho Dene Koe First Nation (ADKFN)
- Tthets'ehk'edeli First Nation (TFN)
- Sambaa k'e First Nation (SKFN)
- Fort Simpson Métis Nation (FSMN)

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<sup>13</sup> See Review Board Online Registry ([www.reviewboard.ca](http://www.reviewboard.ca)) for [Report of Environmental Assessment and Reasons for Decision EA1415-01 Canadian Zinc Corporation Prairie Creek Mine](#).

- Pehdzéh Kǐ first Nation (PKFN)
- Dehcho First Nations (DFN)

CZN has engaged with parties as part of regulatory previous proceedings. Specific to these Applications, CZN also engaged parties 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 NDDB, LKFN, and ADKFN attended the workshop, along with representatives from the GNWT-ENR, GNWT-Lands, representatives from the Review Board, and Board staff. According to the Engagement Record, parties raised questions and provided comments of a technical nature. CZN indicated that they incorporated this information into the project description submitted with the Applications. TFN and SKFN expressed support for the Applications.

### Scope of Previous Environmental Assessments

#### Mining and Milling

Mining and milling were previously assessed under EA0809-002. The scope outlined in the report for EA0809-002 describes the elements of the proposed project that the Review Board considered. The scope of EA0809-002 is presented in Table 2 below.

Table 1: Final Scope of the Project as Defined by EA0809-002<sup>14</sup>

Phase	Components/Activities Included with 2008 Applications and Refinement of the Project during EA0809-002
Construction	Upgrade existing mine facilities including mill concentrator complex, powerhouse generators, maintenance workshops, administration building, accommodations, kitchen, sewage treatment plant, explosives magazine, fuel tanks, water storage pond and catchment pond
	Construction of new mine facilities including DMS plant, temporary DMS rock storage pad, paste backfill plant, concentrate bagging plant, concentrate storage shed, water treatment facility, exfiltration trench effluent outfall, sulphuric acid storage tanks, reagent storage sheds, cement batch plant, ore storage facility, waste rock pile, solid waste facility with incinerator and ancillary mine facilities
	Re-design and construction of existing water storage pond and catchment pond
	Create additional water storage capacity either by raising the dykes in the existing water storage pond or by building a second water storage pond
	Construction of underground facilities including a new 870 level portal with access ramp to lower mining levels, ventilation and exhaust fans, sumps and pumping stations, ore storage bin and underground maintenance shop
Operations	Underground mining and milling of ore including crushing dense media separation, grinding and floatation

<sup>14</sup> Ibid (p.21-22)

Phase	Components/Activities Included with 2008 Applications and Refinement of the Project during EA0809-002
	Production of lead concentrates and zinc concentrates, bagging and storage in concentrate shed until the winter haul season
	Operation of paste backfill plant, DMS plant and concrete batch plant for the production of tailings paste backfill and transport of paste underground for placement
	Operation of water treatment facility, sewage treatment plant, solid waste facility, water storage pond, catchment pond, waste rock pile and associated seepage collection pond
	Operation access roads, storage areas and other mine facilities required for the day to day workings of the mining project
	Management of hazardous and non-hazardous materials and wastes
Water management	Collection of contaminated water from underground, rock waste pile seepage pond, sewage treatment plant and ore stockpile for transfer to water storage pond
	Operation of existing water storage pond including recycling of mill process water
	Temporary storage of tailings in water storage pond
	Construction and operation of water treatment plant and discharge of treated water into Prairie Creek via an exfiltration trench
	Adopt one of two approaches to improving a proposed water treatment plant either by enhancing the sulphide-lime precipitation by adding filtration or by following the sulphide-lime pre-treatment with filtration and ion exchange
	Withdrawal of potable water from mine-site wells in the Prairie Creek aquifer
	Monitoring of water quality and quantity
Transport	Re-establishment of existing 180 km winter road from the mine site to the Liard Highway including construction of 3 route re-alignments that total approx. 63 km
	Construction and use of the Tetcela transfer facility for concentrate storage and handling at km 84.5 of the access route and a second transfer facility at the Liard Highway for the storage and handling of concentrate as well as incoming fuel and mine supplies
	Construction and operation of the annual winter access road during frozen ground conditions seasonally for 14 year mine life to haul concentrate from mine out to Liard Highway and haul fuel and other mine supplies from the Liard Highway to the mine site
	Upgrade and use of the existing 1,000 m length gravel airstrip located at the mine site for transport of people and supplies
	Construction and operation of gravel pits and borrow sites along the winter access road
	Water withdrawal from locations along the winter access road including the wells at the mine, Mosquito Lake, Gap Lake and the Liard River
Closure and reclamation	Closure and reclamation of mine site components and winter access road

The geographical scope of EA0809-002 included communities that traditionally used the area: Nahanni Butte, Fort Simpson, Fort Liard and Wrigley, the areas they use, and vicinity of the proposed project in general. The temporal scope included the following phases of mine life:

- Construction of new mine facilities and road re-alignments (2 years).
- Mine operations (14 years).

- Closure activities (1 year).
- Post-closure monitoring (to be determined in Closure and Reclamation Plan).

### Mineral Exploration

Surface and underground mineral exploration activities were previously assessed under EA00-002, EA01-003, and EA0405-002.<sup>15 16 17</sup> EA0405-002 was approved by the Minister of Indigenous and Northern Affairs Canada on February 3, 2006.<sup>18 19</sup> Decline development was assessed under EA01-002.<sup>20 21</sup> The development activities authorized under the current Licence (MV2019L2-0006) and Permit (MV2020C0008) that authorize surface and underground mineral exploration activities were determined to be exempt from preliminary screening based on Part 1, Schedule 1, section 2,1 of the Exemption List Regulations to the MVRMA.<sup>22</sup> These activities include underground decline development accessed at the 870-metre portal, underground drilling, and surface drilling at up to 60 sites located throughout the Prairie Creek Mine property, treatment of mine water, the use of explosives, use of vehicles and machines, storage of fuel, and use of a campsite.

### **Scope of Preliminary Screening for New Applications**

#### Mining and Milling

The Consolidated Project Description describes an expanded project from what was contemplated as part of previous applications. The Consolidated Project Description summarizes the project in 2013 terms and compares it to the expanded project currently envisioned and applied for. This information is reproduced in Table 2 below.

Table 2: Summary of Project Changes<sup>23</sup>

<b>Mining Activity</b>	<b>2013 Project (values are approximate)</b>	<b>2021 Expanded Project (values are approximate)</b>
Main mine access	• 870 portal	• No change
Amount of ore processed	• ~1,600 tonnes/day	• ~ 2,400 tonnes/day
Mill	• Same footprint as at present	• No change

<sup>15</sup> Review Board EA00-002 [Report of Environmental Assessment on the Canadian Zinc Corporation Phase I Mineral Exploration Drilling Program, May 7, 2001](#)

<sup>16</sup> Review Board EA01-003 [Report of Environmental Assessment on the Canadian Zinc Corporation Phase II Mineral Exploration Drilling Program, October 25, 2001](#)

<sup>17</sup> Review Board EA0405-002 [Reasons for Decision and Report of Environmental Assessment on the Canadian Zinc Corporation Phase III Drilling Program, December 22, 2005](#)

<sup>18</sup> Minister [Accepting EA0405-002, dated February 3, 2006](#)

<sup>19</sup> Review Board's [Public Registry for EA0405-002](#)

<sup>20</sup> Review Board EA01-002 [Report of Environmental Assessment, Canadian Zinc Corporation, Underground Decline and Drilling and Metallurgical Pilot Plant Developments, February 6, 2002](#)

<sup>21</sup> Review Board EA01-002 [Reconsideration of Environmental Assessment Reasons for Decision](#)

<sup>22</sup> Licence [MV2019L2-0006 \(p 45\)](#)

<sup>23</sup> Canadian Zinc Corporation [Consolidated Project Description, May 27, 2021](#) (p. 15)

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

### Mineral Exploration

CZN indicated that no alterations are proposed for mineral exploration beyond what was previously deemed exempt by the Board as part of the proceedings for Licence MV2019L2-0006 and Permit MV2020C0008.

### New Areas and Activities Requiring Screening

To determine the scope of the preliminary screening assessment, the alterations associated with the new Licence and Permit applications were compared against the scope of EA0809-002. Those areas or activities not included in EA0809-002 were included in the preliminary screening assessment. Further, evidence pertaining to impacts and mitigations obtained during the public review of the Applications was also included in the preliminary screening assessment.

Table 3 below identifies new activities and areas associated with the expanded project and subsequently included in the scope of preliminary screening

Table 3: Preliminary Screening for the Applications

Component	Screening Required?	Reason
<b>Area Strip Area</b>		
Airstrip	No	No change to what was contemplated as part of EA0809-002.
Equipment and container laydown area	Yes	The area was screened for laydown and the excess material pile. It will now be used for laydown and container storage.
Quarry	No	No change to what was contemplated as part of EA0809-002.
<b>Main Yard Area</b>		
Water Storage Pond	No	Despite re-design including division into two ponds, no screening required because the scope of the EA included re-design and construction of existing water storage pond and catchment pond.
Flood protection berm	No	No change to what was contemplated as part of EA0809-002.
Living quarters and personnel	Yes	Most of the existing bunkhouses will be removed and replaced with new buildings. The new quarters will be 50% larger to house additional personnel. Incremental increase in rotation flights. Increase in quarters and personnel from 120 people/day to 180 people/day during operations. Up to 300 people per day during peak construction.
Well and pump house	Yes	Increase amount of water withdrawn.
Sewage treatment plant	Yes	An expansion was previously screened but the expansion will be larger. Increase in personnel.
Kitchen	No	The old kitchen will be replaced with new. The replacement was screened and hasn't changed to what was contemplated as part of EA0809-002.
Incinerator	Yes	Incineration of dewatered sewage. New location.
Administration building	No	No change to what was contemplated as part of EA0809-002.
Warehouses	No	Large warehouse construction was planned originally to store supplies between winter road access periods, but now are not needed because of all season road access.
Machine Shops	No	No change to what was contemplated as part of EA0809-002.
Propane bullets	Yes	The propane bullets were screened but not for the revised location.
Decline waste rock pile	No	Use of decline waste rock pile to construct base of new temporary waste rock pile or deposition in main waste rock pile aligns with previous assessment.
Exploration water treatment plant	No	Removal planned.
Polishing Pond	No	Removal planned.
Coarse ore stockpile	No	Removal planned.
Run-of-mine ore stockpile	Yes	Increasing from 40,000 T to 140,000 T.
Temporary waste rock stockpile	Yes	New 3000 T pile near main site mine portal.
Paste backfill plant	Yes	The plant was screened but the location has been revised.

Component	Screening Required?	Reason
Active tailings stockpile	Yes	A 10,000 T pile was screened. The pile will now be 24,000 T.
Secondary tailings stockpile	Yes	New 190,000 T tailings pile.
Secondary run of mill ore stockpile	Yes	New 77,000 T ore pile.
Mill	No	No change to what was contemplated as part of EA0809-002.
Concentrate load-out	No	Smaller building as a result of All-Season Road.
Concentrate transfer	Yes	The original container/bag transfer plan was screened. Now will be done in sealed containers, and the volume increased.
Dense media separation float stockpile	No	No change to what was contemplated as part of EA0809-002.
Power plant	No	No change to what was contemplated as part of EA0809-002.
Diesel storage	No	Previously screened and reduced number of tanks will be used.
LNG/CNG storage and use	Yes	New fuel source.
Water treatment plant	No	No change to what was contemplated as part of EA0809-002.
Catchment pond	No	No change to what was contemplated as part of EA0809-002.
Exfiltration trench	No	No change to what was contemplated as part of EA0809-002.
Backfilled mine	Yes	The original mine development plan was screened. The development extension requires screening.
Various infrastructure: cement plant, acids shack, storage racks, plumbing shop, parts warehouse, wooden cabins, carpentry shop, storage trailers, lumber yard, drill core storage, core shack, drill core, diamond drill staging area, pipe storage, assay lab, storage yard, steel parts yard are all removed in the new Consolidated Project Description	Yes	It was not clear from CZN's Application whether the infrastructure would be relocated or removed. The Board assumes the infrastructure is still necessary for operations, so have contemplated their relocation as part of preliminary screening. The infrastructure was assessed as part of EA0809-002, and it was determined that their impacts would likely be the same, but are unable to ascertain whether the magnitude would change.
<b>Harrison Creek Area</b>		
930 and 970 waste rock piles	No	No change to what was contemplated as part of EA0809-002.
Two bridges	No	No change to what was contemplated as part of EA0809-002.
Waste Rock Pile	Yes	Increasing from 1.3 Mt to 5 Mt. Increased footprint.

Component	Screening Required?	Reason
Bioremediation cell	Yes	The cell was proposed to be within the footprint of the Waste Rock Pile and was screened. The location has been changed.
Sludge storage cell	Yes	The cell was proposed to be within the footprint of the Waste Rock Pile and was screened. The location has been changed.
<b>South Yard Area</b>		
Excess Material Pile	Yes	Location changed from airstrip to South Yard. The new location was previously screened for a second Water Storage Pond.
Reagent Pad	No	No change to what was contemplated as part of EA0809-002.
<b>Activities</b>		
Mine operations	Yes	The expanded project described an increase in mining rate, depth of decline, and potential corresponding increases to the magnitude of impacts assessed under EA0809-002 to water, soil, air, aquatic life, and wildlife, particularly those that are near the mine site, such as Dall's sheep.  Despite altering the fuel source from diesel to liquified or compressed natural gas, it is anticipated that carbon emissions associated with the project could increase due to increased incineration, and flight and vehicular traffic. It is anticipated that the increase usage of the incinerator will increase the generation of controlled substances, including complex organic compounds.
Heavy equipment usage	Yes	Impact remains the same as was contemplated as part of EA0809-002; however, magnitude anticipated to increase.
Use and storage of explosives	Yes	No longer made on site but transported via the All-Season Road. Will now be stored underground as opposed to above ground.
Reagent use	Yes	Potential new products from what as previously contemplated.

### *Temporal Considerations*

Temporal considerations are as follows:

- Construction of new mine facilities and road re-alignments from 2 years to 3 years (EA0809-002 was 2 years).
- Mine operations increasing from 14 years to 15 years (EA0809-002 was 14 years).
- Closure activities remained at 1 year (same as EA0809-002).
- Post-closure monitoring (to be determined in Closure and Reclamation Plan, same as EA0809-002).

The Board determined that alterations to the temporal considerations of the expanded project do not significantly alter the impacts and mitigations from what was contemplated as part of EA0809-002.

### *Considerations for Wildlife*

Impact and mitigation measures, including regulatory instruments pertaining to wildlife, were considered in the Board's determination. This includes the potential requirement for a Wildlife Management and Monitoring Plan under the *Wildlife Act* and provisions under the *Species at Risk Act*.

### *Considerations for Air Quality*

Impacts and mitigation measures, including regulatory instruments pertaining to air quality, were considered in the Board's determination. This includes the Air Quality and Emissions Monitoring and Management Plan required by ECCC.

### *Considerations for the All-Season Road*

Some of the alterations associated with the expanded project are linked to the All-Season Road that will be used to transport materials to and from the mine site. This includes the hauling period, number of trucks, and the types of materials transported. Those impacts were not assessed as part of the preliminary screening for the current Applications. The All-Season Road is authorized under separate Licences and a Permit with various management plan submission requirements to address impacts identified as part of the EA for the All-Season Road (EA1415-01)<sup>24</sup>. The management plans required by the All-Season Road authorizations will require updates to align with the expanded project, for Board decision.

### Mineral Exploration

The Board determined that the mineral exploration activities included in the new Applications do not warrant further preliminary screening as they have been previously screened and no changes have been proposed.

### **Public Record and Regulatory Proceeding**

To assist the Board in its preliminary screening determination for the Project, the Board distributed the Applications for public review on June 4, 2021, inviting reviewers to provide comments and recommendations on the Applications and the preliminary screening (e.g., on impacts and mitigation measures) using the Online Review System (ORS). Comments were due July 15, 2021, with responses from the Applicant due August 2, 2021. The Board received comments and recommendations from ADKFN, ECCC, DFO, GNWT-ENR, GNWT-Lands, GNWT-Inspector, LKFN, NDDB, and PC.<sup>25</sup> Board staff also submitted comments.

By the end of the July 15, 2021 review comment deadline, ADKFN, LKFN, and NDDB all concluded that no EA was necessary. Specifically, NDDB concluded that an EA would not provide much benefit to the project and both NDDB and LKFN indicated that the current understanding of potential impacts has improved since EA0809-002 was conducted.

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<sup>24</sup> [Review Board EA1415-01](#)

<sup>25</sup> [See MVLWB Online Registry for Canadian Zinc Corporation – Review Comment Summary Table – Aug2 21.](#)

PC indicated there is uncertainty in CZN's predictions regarding an overall reduction in environmental impacts, and that the increased rate in ore production and stockpiles [ore, tailings, waste rock] would substantially increase the risk of potential environmental impacts to the Nahanni National Park Reserve should CZN's predictions prove incorrect.

The GNWT indicated they agree with CZN's conclusions regarding preliminary screening requirements (GNWT 20), but noted additional activities and areas that CZN appeared to have omitted. Specifically, the GNWT noted (GNWT 21) the absence of various components, as follows: acids shack, storage racks, plumbing shop, parts warehouse, wooden cabins, carpentry shop, storage trailers, lumber yard, drill core storage, core shack, drill core, diamond drill staging area, pipe storage, assay lab, storage yard, steel parts yard were all removed in the revised mine plan. The GNWT indicated that removal is not an issue, but in the event any of the components are needed for the revised mine plan, it should be clearly identified where they will be relocated as there may not be suitable space.

ECCC and PC noted the potential for a variety of impacts to air quality, and that CZN suggested these will be mitigated through the Air Quality and Emissions Monitoring Plan. This management plan is not required by the current authorizations, and was not included as part of CZN's Applications.

ECCC noted that CZN referenced a Wildlife Management and Monitoring Plan as a mitigation measure for potential impacts to wildlife, and that the management plan was not included as part of CZN's Applications. ECCC conveyed that they could not meaningfully assess the proposed mitigations and monitoring related to wildlife (ECCC 2).

#### *ADKFN Request for Late Comment Filing*

On August 10, 2021, ADKFN submitted a [letter](#) to the Board requesting an opportunity to submit additional comments about the preliminary screening for CZN's Applications. In their letter, ADKFN indicated that they retract their previous position about whether an Environmental Assessment is required. Upon receiving ADKFN's request, Board staff sent the letter to CZN requesting a response by August 12, 2021 for the Board's consideration. Following ADKFN's submission, NDDB also submitted a letter on their own accord on August 12, 2021.

ADKFN indicated their change in position was related to CZN's responses to the public review comments, as well as new information they felt was provided by CZN in response to all comments on August 2, 2021. ADKFN highlighted several concerns that they believed warranted additional time to determine whether the Applications should be referred to Environmental Assessment, including, engagement, potential impacts on their cultural way of life and wildlife, and lack of incorporation of Indigenous Knowledge into the project.

In considering the request from ADKFN, the Board notes the following:

1. The Board's [Rules of Procedure Including Public Hearings](#) have been adhered to for processing CZN's Applications. A Work Plan for the proceeding was distributed to all Parties to ensure they understood review deadlines and the anticipated timing of tasks. While ADKFN submitted their

August 10, 2021 letter approximately four weeks after comments were due on the Applications and preliminary screening, they had already provided fulsome review comments by the July 15, 2021 review deadline.

2. Many of ADKFN's concerns indicate a dissatisfaction with CZN's engagement efforts and negotiations pertaining to a benefit agreement. Prior to sending the Applications for review, Board staff ensured CZN's Engagement Plan and Engagement Record were in accordance with the Board's [Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits](#). In their response letter to ADKFN review comments, CZN provided further evidence of engagement with ADKFN and committed to ongoing engagement associated with the project through a Technical Advisory Committee and Socio-Economic Advisory Committee in the Engagement Plan. The Board is satisfied that engagement to date for the new Applications has been adequate and notes that negotiations surrounding benefit agreements are outside the Board's jurisdiction.
3. In their August 10, 2021 letter, ADKFN discussed updated information that was uploaded to the Board's Online Review System by CZN in response to comments regarding haul traffic associated with the updated mine plan. A memorandum provided by CZN outlined the updated estimated haul traffic, while another memorandum discussed effects of the change. Both documents provided evidence that the increased haul traffic was not substantially different, and would not result in increased effects, compared to what was evaluated by the Environmental Assessment conducted for the All-Season Road (EA1415-01). During the review of the Applications, CZN committed to incorporating into the Wildlife Management and Monitoring Plan mitigation and monitoring associated with the road traffic for the All-Season Road and as part of other updates related to the All-Season Road Permit (MV2014F0013) and Licences (MV0214L8-0006 and MV2019L8-0002). The Board also notes that a Wildlife Management and Monitoring Plan is a potential requirement for the Project through the *Wildlife Act*.
4. Based on the letters received from ADKFN, CZN, and NDDDB, related to this request, the Board is satisfied that no new information was provided during CZN's response to reviewer comments that would warrant additional time for review in order for the Board to conduct the preliminary screening.
5. Lastly, the Board notes that the proceeding still includes a Technical Session and a Public Hearing which will provide opportunities for further consideration of ADKFN concerns. In addition, following transmittal of the Board's recommendation about the Water Licence to the Minister of GNWT-ENR for review and final decision, the GNWT and Minister will determine whether Crown consultation was adequate before making a final decision to approve the licence.

For the reasons noted above, the Board denied ADKFN's request for more time to submit evidence for the preliminary screening for the Applications.

The Board is satisfied that a reasonable period of notice was given to affected communities and First Nations, as required by subsection 63(2) of the MVRMA.

Pursuant to section 27, paragraphs (a) and (b) of the Dehcho First Nations (DFN) Interim Measures Agreement, the Board has determined that written notice was given to the DFN, and that a reasonable period of time was allowed for DFN to make representations with respect to the Applications.

The Board also provided notification to the Tłıchǫ Government on the Applications in accordance with the MVRMA for a “major mining project,” as defined in Chapter 23 of the Tłıchǫ Land Claims and Self-Government Agreement.

#### **4.0 Potential Impacts and Proposed Mitigations**

Licence and permit conditions for the Project will be discussed in further detail by all Parties through the regulatory proceeding and will be finalized by the Board following completion of the regulatory proceeding.

Table 4 below summarizes:

- the potential impacts and proposed mitigations for the proposed changes to the Project;
- the concerns that were identified during the regulatory proceeding and how the Applicant addressed those concerns; and
- the Board’s analysis of the potential impacts and proposed mitigations.

**Table 4: Potential Impacts and Proposed Mitigations for the Proposed Changes to the Project**

Potential Impacts	Activity	Proposed Mitigations <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	Board Analysis and Determination
Destabilization / erosion	Construction and use of 42 hectare Waste Rock Pile expansion adjacent to Harrison Creek, establishing Excess Material Stockpile, new stockpiles (tailings, ore, waste rock), truck pullout, cut and fill, relocation of various infrastructure, use of motorized and heavy equipment, blasting activities	<p>The Applicant proposed the following mitigations in the Applications and, where identified, as part of responses to review comments:</p> <ul style="list-style-type: none"> <li>• Diversions and collection of precipitation runoff from the Waste Rock Pile extension.</li> <li>• Diversions will have energy dissipation and be sized for flow peaks with consideration for climate change.</li> <li>• Access roads to the Waste Rock Pile will include runoff control.</li> <li>• Collected runoff from the Waste Rock Pile and Road to the Waste Rock Pile will be diverted for treatment prior to discharge.</li> <li>• Considerations for closure of the Waste Rock Pile and other piles includes establishing a cover, grading the cover for runoff collection, and a runoff management system – these closure and maintenance activities will be determined through the development of a Closure and Reclamation Plan.</li> <li>• A Surveillance Network Program will be established for the project, including nearby receiving water bodies Prairie Creek and Harrison Creek with Effluent Quality Criteria to achieve Water Quality Objectives in the receiving environment. Potential contaminants of concern from the mining process will be included as part of monitoring requirements, including metals associated with the ore and potential contaminants resulting for other activities, such as blasting and use of petroleum based fuels.</li> </ul> <p>Additionally, the Applicant committed to adhering to the <i>Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters</i><sup>26</sup> (<a href="#">Review comments</a> ADFKN 23 and DFO 3).</p> <p>The following conditions from existing authorizations mitigate the described impacts:</p>	<p>Based on the geographic size of the undisturbed area, previously assessed impacts, historical development, described mitigations, it is the Board’s opinion that the proposed activities will not have a significant adverse impact on the environment or be a cause of public concern.</p> <p>Regarding the impacts posed from the new tailings pile, it is the Board’s opinion that they can be mitigated through conditions in the Licence and Permit.</p>

<sup>26</sup> [Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters \(DFO, 1998\)](#)

Potential Impacts	Activity	Proposed Mitigations <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	Board Analysis and Determination
		<ul style="list-style-type: none"> <li>• Permit Condition 12 PROGRESSIVE EROSION CONTROL</li> <li>• Licence, Part D, Condition 6 FINAL DETAIL DESIGN REPORTS (CONSTRUCTION OF THE WASTE ROCK PILE)</li> <li>• Licence, Part D, Condition 7 FINAL DETAIL DESIGN REPORT (CONSTRUCTION OF THE ORE STOCKPILES(S))</li> <li>• Licence, Part E, Condition 12 EXPLOSIVES MANAGEMENT PLAN</li> <li>• Licence, Part D, Condition 16 FINAL DETAILED DESIGN REPORT (FINAL CONSTRUCTION REPORT)</li> <li>• Licence, Part I, Condition 1, CLOSURE AND RECLAMATION PLAN</li> <li>• Licence, Part I, Condition 5, FINAL CLOSURE AND RECLAMATION PLAN</li> </ul> <p>The Board has standard conditions that are typically used to mitigate the described impact:</p> <ul style="list-style-type: none"> <li>• DESIGN AND CONSTRUCTION PLANS</li> <li>• STRUCTURE DESCRIPTION AND CONSTRUCTION PLANS</li> </ul>	
Soil contamination	Transfer, storage, and use of petroleum products and/or chemicals, transfer of filtered tailings between the active and secondary stockpiles, transport of metal concentrates, new reagents	<p>The Applicant proposed the following mitigations in the Applications and, where identified, as part of responses to review comments:</p> <ul style="list-style-type: none"> <li>• Standard operating procedures will be utilized for fuel transfer.</li> <li>• Fuel tanks will contain secondary storage.</li> <li>• Drip trays will be placed under vehicles while not in operation.</li> <li>• Personnel will be trained in operational and response procedures.</li> <li>• Spill response kits will be located throughout the facility.</li> <li>• Use of natural gas as main fuel source.</li> <li>• The transfer of tailings will be done using dump trucks with tarpaulin covers.</li> <li>• Truck loading and unloading with tailings will occur in covered areas and trucks will not be overfilled.</li> <li>• The transportation of metal concentrates will be done using trucks hauling sealed containers.</li> <li>• Transport containers will enter and leave the concentrate load-out building on</li> </ul>	<p>Based on the described mitigations, it is the Board's opinion that the proposed activities will not have a significant adverse impact on the environment or be a cause of public concern.</p> <p>Regarding the adequacy of mitigations for impacts posed from the new tailings pile, it is the Board's opinion that they</p>

Potential Impacts	Activity	Proposed Mitigations <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	Board Analysis and Determination
		<p>rollers, eliminating the need for trucks to enter the building.</p> <p>The following conditions from existing authorizations mitigate the described impacts:</p> <ul style="list-style-type: none"> <li>• Permit Condition 15, REPORT SPILLS</li> <li>• Permit Condition 24, WASTE MANAGEMENT PLAN</li> <li>• Permit Condition 40, SPILL CONTINGENCY PLAN</li> <li>• Licence Part E, Condition 7, CONTAMINANT LOADING MANAGEMENT PLAN</li> </ul>	<p>can be mitigated through conditions in the Licence and Permit.</p>
Water table alterations	Withdrawal of groundwater for use as potable water	<p>The Applicant proposed in the Applications that the amount of groundwater withdrawn will be less than supply potential. Groundwater withdrawal will be metered, monitored, and reported as part of the Annual Water Licence Report.</p>	<p>Based on the location of the Project and information provided by the Applicant, it is the Board's opinion that the proposed activities will not have a significant adverse impact on the environment or be a cause of public concern.</p>
Changes in groundwater quality, changes in surface water quality, effects to health of aquatic life (toxins, metals, sediment, etc.)	Mine operations, seepage from waste and storage piles, effluent discharge, diverting water, direct or indirect disposal of waste into water, stripping of overburden adjacent to a watercourse, excavation of earth adjacent to a	<p>The Applicant proposed the following mitigations in the Applications and, where identified, as part of responses to review comments:</p> <ul style="list-style-type: none"> <li>• The interception and storage of groundwater that would otherwise flow into the mine and become impacted. The Applicant plans to pump this water to surface for storage in the Water Storage Pond.</li> <li>• Diversions and collection of precipitation runoff from the Waste Rock Pile extension.</li> <li>• Diversions will have energy dissipation and be sized for flow peaks with consideration for climate change.</li> <li>• Access roads to the Waste Rock Pile will include runoff control.</li> <li>• Collected runoff from the Waste Rock Pile and road to the Waste Rock Pile will be diverted for treatment prior to discharge.</li> </ul>	<p>Based on the previously assessed impacts, historical development, described mitigations, it is the Board's opinion that the proposed activities will not have a significant adverse impact on the environment or be a cause of public concern.</p>

Potential Impacts	Activity	Proposed Mitigations <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	Board Analysis and Determination
	watercourse, relocation of various infrastructure	<ul style="list-style-type: none"> <li>• Considerations for closure of the Waste Rock Pile and other piles includes establishing a cover, grading the cover for runoff collection, and a runoff management system – these closure and maintenance activities will be determined through the development of a Closure and Reclamation Plan.</li> <li>• Run of Mine ore stockpile, Secondary Filtered Tailings Stockpile, Temporary Waste Rock Stockpile, and Dense Media Separation Surge Piles will contain lined pads with seepage collection that report to water treatment facilities.</li> <li>• Seepage from the Waste Rock Pile will be collected to prevent transport to waterbodies or underground aquifers.</li> <li>• The transferring of tailings will be done using dump trucks with tarpaulin covers.</li> <li>• Truck loading and unloading of tailings will occur in covered areas and trucks will not be overfilled.</li> <li>• Camp ditch flows will intercept shallow groundwater down-gradient of the Run of Mine Stockpile into a sump and recycle the water in the mining process followed by treatment.</li> <li>• Sewage effluent will be treated and monitored prior to discharge to the Water Storage Pond.</li> <li>• Mill effluent, contact mine water, and treated sewage effluent will be recycled between the Water Storage Pond and the Mill.</li> <li>• Upon closure, the mine will be backfilled to limit water emanating from underground, waste piles will be covered to limit water infiltration, groundwater will be pumped and treated post-closure – these methods will be determined during development of the Closure and Reclamation Plan.</li> <li>• A Surveillance Network Program will be established for the project, including nearby receiving water bodies Prairie Creek and Harrison Creek with Effluent Quality Criteria to achieve Water Quality Objectives in the receiving environment. Potential contaminants of concern from the mining process will be included as part of monitoring requirements, including metals associated</li> </ul>	

Potential Impacts	Activity	<b>Proposed Mitigations</b> <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	Board Analysis and Determination
		<p>with the ore and host rock and potential contaminants resulting for other activities, such as blasting and use of petroleum based fuels.</p> <ul style="list-style-type: none"> <li>• The Excess Material Pile will be located 100 meters from Prairie Creek, with muskeg between the pile and creek.</li> <li>• Blasting residues will be limited by the use of emulsion explosives.</li> <li>• Adherence to the Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters<sup>27</sup>, including: <ul style="list-style-type: none"> <li>○ Establishing and adhering to an overpressure threshold.</li> <li>○ Determining required setback distance from both general and spawning habitat types based on the anticipated charge weights.</li> <li>○ Refrain from the use of confined or unconfined explosives near fish habitat.</li> <li>○ Taking precautions to prevent the discharge of potentially toxic by-products such as ammonia, at concentrations which create a risk to aquatic life (<a href="#">Review comment</a> ADKFN 23).</li> </ul> </li> </ul> <p>The following conditions from existing authorizations mitigate the described impacts:</p> <ul style="list-style-type: none"> <li>• Licence, Part D, Condition 6 FINAL DETAIL DESIGN REPORT (CONSTRUCTION OF THE WASTE ROCK PILE)</li> <li>• Licence, Part D, Condition 7 FINAL DETAIL DESIGN REPORT (CONSTRUCTION OF THE ORE STOCKPILES(S))</li> <li>• Licence, Part D, Condition 9 FINAL DETAILED DESIGN REPORT (WATER STORAGE POND)</li> <li>• Licence, Part D, Condition 14 FINAL DETAILED DESIGN REPORT (EXFILTRATION TRENCH)</li> <li>• Licence, Part D, Condition 16 FINAL DETAILED DESIGN REPORT (FINAL CONSTRUCTION REPORT)</li> <li>• Licence, Part D, Condition 18 FINAL DETAILED DESIGN REPORT, CONSTRUCTION DRAWINGS AND SPECIFICATIONS, AND A QUALITY CONTROL PLAN</li> </ul>	

<sup>27</sup> [Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters \(DFO, 1998\)](#)

Potential Impacts	Activity	<b>Proposed Mitigations</b> <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	Board Analysis and Determination
		<ul style="list-style-type: none"> <li>• Licence, Part D, Condition 19 GEOTECHNICAL ENGINEERING REPORT (COMPLETION OF ENGINEERED STRUCTURES)</li> <li>• Licence, Part E, Condition 5 WASTE ROCK ORE STORAGE MANAGEMENT PLAN</li> <li>• Licence, Part E, Condition 7, CONTAMINANT LOADING MANAGEMENT PLAN</li> <li>• Licence, Part E, Condition 9, TAILINGS AND BACKFILL MANAGEMENT PLAN</li> <li>• Licence, Part F, Condition 4, CONSTRUCTION PHASE WATER MANAGEMENT PLAN</li> <li>• Licence, Part F, Condition 5, OPERATIONAL PHASE WATER MANAGEMENT PLAN</li> <li>• Licence, Part G, Condition 2, AEMP DESIGN PLAN</li> <li>• Licence, Part G, Condition 5, AQUATIC EFFECTS RE-EVALUATION REPORT</li> <li>• Licence, Part H, Condition 5, MINE SITE CONTINGENCY PLAN</li> </ul> <p>The Board has standard conditions that are typically used to mitigate the described impacts:</p> <ul style="list-style-type: none"> <li>• DESIGN AND CONSTRUCTION PLANS</li> <li>• STRUCTURE DESCRIPTION AND CONSTRUCTION PLANS</li> <li>• CLOSURE AND RECLAMATION PLAN – REVISED</li> </ul>	
Change in extent of permafrost	Removal of overburden for Waste Rock Pile expansion, Excess Material Pile	The Applicant proposed in the Applications that discontinuous permafrost is present in the South Yard associated with muskeg and clay soils where Excess Material Pile will be stored, while they anticipate permafrost to not be present north of the mine where the Waste Rock Pile will be expanded due to south aspect and thin or no soil with rocky exposures.	Based on EA0809-002, it is the Board’s opinion that the proposed activities will not have a significant adverse impact on the environment be a cause of public concern.
Greenhouse gases, dust	Burning of fossil fuels, incineration,	The Applicant proposed the following mitigations in the Applications and, where identified, as part of responses to review comments:	Based on the previously assessed impacts,

Potential Impacts	Activity	Proposed Mitigations <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	Board Analysis and Determination
	usage of heavy equipment, construction activities, new stockpiles (tailings, ore, waste rock)	<ul style="list-style-type: none"> <li>• Use of natural gas as the main fuel source.</li> <li>• Use of a dual chamber incinerator.</li> <li>• The transfer of tailings using dump trucks with tarpaulin covers.</li> <li>• Loading and unloading of trucks with tailings will be conducted in covered areas and trucks will not be overfilled.</li> <li>• The transportation of metal concentrates will be done using trucks hauling sealed containers.</li> <li>• Transport containers will enter and leave the concentrate load-out building on rollers, eliminating the need for trucks to enter the building.</li> </ul> <p>The following conditions from existing authorizations mitigate the described impacts:</p> <ul style="list-style-type: none"> <li>• Licence, Part D, Condition 7 FINAL DETAIL DESIGN REPORT (CONSTRUCTION OF THE ORE STOCKPILES(S))</li> <li>• Licence, Part E, Condition 5 WASTE ROCK ORE STORAGE MANAGEMENT PLAN</li> <li>• Licence, Part E, Condition 7 TAILINGS AND BACKFILL MANAGEMENT PLAN</li> <li>• Licence, Part E, Condition 7, CONTAMINANT LOADING MANAGEMENT PLAN</li> </ul> <p>The Applicant committed to updating an Air Quality and Emissions Monitoring and Management Plan required by regulators (<a href="#">Review comments</a> ECCC 4, PC 17, Racher 48).</p>	<p>historical development, described mitigations, it is the Board’s opinion that the proposed activities will not have a significant adverse impact on the environment or be a cause of public concern.</p> <p>Regarding the impacts posed from the new tailings pile, it is the Board’s opinion that they can be mitigated through conditions in the Licence and Permit.</p>
Vegetation loss, loss dens, or nests, wildlife disturbance, direct injury or mortality, sensory disturbance,	Construction and use of 42 hectare waste rock pile expansion adjacent to Harrison Creek, clearing of timber, brush, or vegetation mat, truck, air traffic	<p>The Applicant proposed the following mitigations in the Applications and, where identified, as part of responses to review comments (<a href="#">Review comments</a> PC 21, GNWT 27, 28, 30):</p> <ul style="list-style-type: none"> <li>• Covering the sewage cell to limit odour or dewatering and incinerating dry sewage sludge.</li> <li>• Adherence to a Wildlife Management and Monitoring Plan if required under the <i>Wildlife Act</i>, with updates pertaining to: <ul style="list-style-type: none"> <li>○ Wildlife monitoring.</li> <li>○ Managing wildlife attractants.</li> </ul> </li> </ul>	Based on the previously assessed impacts, historical development, described mitigations, and potential regulation by other regulators through a Wildlife Management and Monitoring Plan, it is the

Potential Impacts	Activity	Proposed Mitigations <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	Board Analysis and Determination
attraction to operations, disturbance or destruction of habitat, risk of injury, risk of mortality, risk of contact with or ingestion of toxic substances, barriers to movements or migration.		<ul style="list-style-type: none"> <li>○ Managing of human-wildlife conflict.</li> <li>○ Specifications pertaining to fencing around waste storage areas.</li> <li>○ Personnel training in bear awareness.</li> <li>○ Recently assessed/listed species at risk that may overlap with the project area.</li> <li>○ Detail on pre-vegetation clearing or pre-disturbance surveys that will take place to determine the potential presence of summer maternity roosts of Little Brown Myotis and Northern Myotis.</li> <li>○ Mitigation measures that will be followed in the event Little Brown Myotis and Northern Myotis are detected.</li> <li>● Establishing a Flight Impact Mitigation Plan (<a href="#">Review comment PC 13</a>).</li> <li>● Conducting vegetation clearing and any new ground disturbance outside of the nesting season for birds in the project area.</li> <li>● If disturbance or destruction of an occupied nest or eggs of a non-migratory bird species (including raptors), or an unoccupied raptor nest, cannot be avoided and all other all mitigation options have been ruled out, the Applicant will call the ENR office to determine whether a permit to disturb or destroy the nest/eggs can be obtained.</li> <li>● Adherence to various guidance material, including: <ul style="list-style-type: none"> <li>○ Information pertaining to critical breeding periods for raptors in the Northwest Territories.<sup>28</sup></li> <li>○ Government of Canada’s Guidelines to reduce risk to migratory birds.<sup>29</sup></li> <li>○ Government of Canada’s General nesting periods of migratory birds.<sup>30</sup></li> <li>○ If active nests are encountered during project activities, implement protective buffer zones described in the applicable regional Land Use Plan, Table 2-5 of the Northern Land Use Guidelines – Northwest Territories</li> </ul> </li> </ul>	Board’s opinion that the proposed activities will not have a significant adverse impact on the environment or be a cause of public concern.

<sup>28</sup> [Critical Breeding Periods for Raptor Species of the Northwest Territories \(Shank and Poole, 2013\)](#)

<sup>29</sup> [Government of Canada’s Guidelines to reduce risk to migratory birds](#)

<sup>30</sup> [Government of Canada’s General nesting periods of migratory birds](#)

Potential Impacts	Activity	Proposed Mitigations <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	Board Analysis and Determination
		<p>Seismic Operations<sup>31</sup> or the Government of Canada’s guidance on Establishing buffer zones and setback distances for nests.<sup>32</sup></p> <ul style="list-style-type: none"> <li>○ If bats are suspected to be present in structures or buildings associated with the project, the Applicant will consult the <i>NWT Guide for Managing Bats in Buildings</i>.<sup>33</sup></li> <li>○ Setback distances and timing windows for wildlife abodes are provided in Table 2-5 of the <i>Northern Land Use Guidelines: Northwest Territories Seismic Operations</i>.<sup>34</sup></li> </ul> <ul style="list-style-type: none"> <li>● Contacting GNWT-ENR prior to start-up of project activities to determine if there are any known dens, push-ups, lodges, beaver dams or hibernacula, or bat maternity roosts within the project area.</li> <li>● Conducting pre-activity surveys within 800m of the waste rock pile or any other areas experiencing new vegetation clearing or ground disturbance to identify active bear dens between September 30 and March 30.</li> <li>● If an active bear den is detected, or suspected, implement and maintain an 800m buffer zone until the bear emerges in spring.</li> <li>● If the bear den and exclusion zone would result in the halt of part or the entire program, contact GNWT-ENR to discuss alternative mitigation options. The location of active bear dens should be kept confidential between the developer and GNWT-ENR until after emergence in the spring.</li> <li>● Checking whether there are setback distances and timing restrictions for wildlife abodes within the applicable regional land use plan.</li> <li>● Inspecting for nests and bats, and they will avoid clearing and demolition to the extent possible if any are found.</li> <li>● Fitting power generating equipment with industry standard muffler systems,</li> </ul>	

<sup>31</sup> [GNWT Department of Lands Northern Land Use Guidelines, Northwest Territories Seismic Operations \(2015\)](#)

<sup>32</sup> [Government of Canada’s Guidelines to reduce risk to migratory birds](#), buffer zones and setback distances

<sup>33</sup> [GNWT Guide for Managing Bats in Buildings](#)

<sup>34</sup> [GNWT Department of Lands Northern Land Use Guidelines, Northwest Territories Seismic Operations \(2015\)](#)

Potential Impacts	Activity	Proposed Mitigations <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	Board Analysis and Determination
		controlling dust, following best practices for spill containment, hydrocarbon storage, and waste management, and camp sighting logs and wildlife reporting procedures ( <a href="#">Review comment</a> Racher 45).	
Change to or loss of heritage resources	Construction, Waste Rock Pile expansion, Excess Material Stockpile, truck pullout	<p>The Applicant indicated that they consider the extension area for the Waste Rock Pile to have low potential for heritage resources. The Applicant indicated that the South Yard where the Excess Material Pile will be established was previously screened for a second Water Storage Pond, and is already developed with excavations, access roads, trailers, and the Reagent Pad. The Applicant indicated that the truck pullout near the airport is adjacent to previously disturbed areas.</p> <p>Conditions from existing authorizations to mitigate the described impacts:</p> <ul style="list-style-type: none"> <li>• Permit, Condition 29, ARCHAEOLOGICAL BUFFER</li> <li>• Permit, Condition 30, SITE DISTURBANCE</li> </ul>	Based on the previously assessed impacts, historical development, the probability of the impact occurring, and described mitigations, it is the Board’s opinion that the proposed activities will not have a significant adverse impact on the environment or be a cause of public concern.
Increased human health hazard and risk	Transfer, storage, and use of petroleum products and/or chemicals, storage of liquified or compressed natural gas, new reagents, new location of incinerator	<p>The Applicant proposed the following mitigations in the Applications and, where identified, as part of responses to review comments:</p> <ul style="list-style-type: none"> <li>• Natural gas will be stored in engineered vessels.</li> <li>• Personnel will be trained in the use of the natural gas vessels.</li> <li>• The natural gas vessels will be stored on the east side of the Tank Farm away from personnel quarters.</li> <li>• Vessels will be transported throughout site on dedicated trailers.</li> </ul> <p>The following conditions from existing authorizations mitigate the described impacts:</p> <ul style="list-style-type: none"> <li>• Permit Condition 15, REPORT SPILLS</li> <li>• Permit Condition 24, WASTE MANAGEMENT PLAN</li> <li>• Permit Condition 40, SPILL CONTINGENCY PLAN</li> </ul> <p>The Applicant is required to adhere to legislation pertaining to health and safety, such</p>	Based on the previously assessed impacts, historical development, the probability of the impact occurring, and described mitigations, it is the Board’s opinion that the proposed activities will not have a significant adverse impact on the environment or be a cause of public concern.

<b>Potential Impacts</b>	<b>Activity</b>	<b>Proposed Mitigations</b> <i>Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.</i>	<b>Board Analysis and Determination</b>
		as the <i>Safety Act</i> and <i>Mine Health and Safety Act</i> and associated regulations.	
Economic opportunities	Mine construction and operations, and mineral exploration	The Applicant proposed there will be increased opportunities for employment and larger business contracts.	Based on the previously assessed impacts and historical development, it is the Board's opinion that the proposed activities will not be a cause of public concern.

#### **4.1 Consideration of Potential Impacts**

Based on the potential impacts and proposed mitigations identified above in Table 4, the Board considered whether the changes to the Project might have a significant adverse impact on the environment. In general, impacts of the changes to the Project on the environment can be mitigated through the use of standard permit and/or licence conditions and/or project-specific conditions established by the Board as per the MVLWB [Standard Process for Creating New Conditions](#). These conditions may include requirements for management and monitoring plans that provide detailed information regarding the implementation of mitigation measures and the evaluation of their effectiveness.

The conditions will be discussed in further detail by all Parties through the regulatory proceeding and will be finalized by the Board following completion of the regulatory proceeding.

As previously discussed, the Board also considered mitigations not directly tied to permit or licence conditions in the preliminary screening. This included a consideration of regulatory instruments that will or likely be required through other bodies, including GNWT-ENR (*Wildlife Act*), ECCC (SARA, air quality), and the Northwest Territories Workers' Safety & Compensation Commission (*Safety Act* and *Mine Health and Safety Act*). CZN has also committed to following best management practices outlined in several guidelines (e.g., *Northern Land Use Guidelines*) that are not directly referenced in any of the Board's standard permit or licence conditions.

#### **4.2 Consideration of Public Concern**

In addition to considering the potential impacts of the changes to the Project, the Board considered whether the changes to the Project might be a cause of public concern.

Based on the evidence provided during the regulatory proceeding to date, the Board did not identify any comments or issues that indicate that the Project is a cause of public concern.

#### **5.0 Conclusion**

The Mackenzie Valley Environmental Impact Review Board (the Review Board) completed EAs of the Project on May 7, 2001, October 25, 2001, February 6, 2002, December 22, 2005, and December 8, 2011<sup>35 36 37 38 39</sup>; however, the Applications include proposed changes to the Project since the EA for the Mine was conducted (EA0809-002). Accordingly, the Board has determined that Project activities that have

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<sup>35</sup> Review Board [Report of Environmental Assessment on the Canadian Zinc Corporation Phase I Mineral Exploration Drilling Program, May 7, 2001](#)

<sup>36</sup> Review Board [Report of Environmental Assessment on the Canadian Zinc Corporation Phase II Mineral Exploration Drilling Program, October 25, 2001](#)

<sup>37</sup> Review Board EA01-002 [Report of Environmental Assessment, Canadian Zinc Corporation, Underground Decline and Drilling and Metallurgical Pilot Plant Developments, February 6, 2002](#)

<sup>38</sup> Review Board [Reasons for Decision and Report of Environmental Assessment on the Canadian Zinc Corporation Phase III Drilling Program, December 22, 2005](#)

<sup>39</sup> Review Board Online Registry ([www.reviewboard.ca](http://www.reviewboard.ca)) for [Report of Environmental Assessment and Reasons for Decision EA0809-002 Canadian Zinc Corporation Prairie Creek Mine](#).

already been subject to Part 5 of the MVRMA are exempt from preliminary screening under Part 1, Schedule 1, section 2.1 of the Exemption List Regulations to the MVRMA. The Board has conducted a preliminary screening of the proposed changes to the Project.

The Board has reviewed all the evidence received during the regulatory process with respect to the Preliminary Screening of the proposed changes to the Project. Based on the evidence, it is the Board's opinion that the proposed changes to the Project will not have a significant adverse impact on the environment or be a cause of public concern, as set out in paragraph 125(1)(a) of the MVRMA. The Board has therefore decided not to refer the proposed changes to the Project to Environmental Assessment and will resume the regulatory process.

SIGNATURE



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Mavis Cli-Michaud, Chair  
Mackenzie Valley Land and Water Board

August 27, 2021

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Date