

INDEPENDENT TECHNICAL REVIEW PANEL

TERMS OF REFERENCE

Canadian Zinc Corp.

Prairie Creek All Season Road Project

1.0 Introduction and Background

In its Report of Environmental Assessment and Reasons for Decision (EA1415-01) regarding Canadian Zinc Corp.'s (CanZinc) Prairie Creek All Season Road Project, the Mackenzie Valley Environmental Impact Review Board (the Review Board) required the formation of an Independent Technical Review Panel (the Panel), funded by CanZinc, to “*evaluate and approve the final road design*”. The project consists of the design, construction and operation of an all season road (ASR).

The ASR will be 170 km long, extending from the Nahanni Butte Access Road to the Prairie Creek Mine, crossing through the Nahanni National Park Reserve (NNPR). The project is located in the Deh Cho region of the Northwest Territories.

For the purposes of the Panel's involvement, the overall ASR project comprises three phases:

- Phase 1: development and operation of a winter access road (WAR) in 2019/2020, intended to allow completion of the remaining investigations for the design of the ASR and to facilitate transport of supplies to the Prairie Creek Mine.
- Phase 2: construction of the ASR, starting in early 2020.
- Phase 3: operation of the ASR during the life of the mine.

To manage the timely preparation, review and approval burden for development plans, CanZinc have proposed, and regulators and affected stakeholders have agreed, that the designs and management plans may be developed and approved for each phase sequentially. These approvals are the responsibility of the Mackenzie Valley Land and Water Board (the Water Board) and Parks Canada.

Relative to the role of the Panel, this document presents the general terms of reference (TOR) for the Panel, and a specific scope-of-work for Phase 1, along with provisional scopes-of-work for the remaining phases.

2.0 Context

The Review Board published EA1415-01 in September 2017. It is evident from this report that fundamental and significant differing opinions were presented to the Review Board by CanZinc

and either stakeholders (i.e. Parks Canada, Deh Cho First Nation and others) or the Review Board's consultants on issues related to risk associated with the design, construction and operation of the ASR. These risks appeared to centre around the environment and human safety.

Given the divergent views, the Review Board mandated the creation of the Panel under Measure 5-1 in EA1415-01.

3.0 Mandate and Scope

As directed by the Review Board in EA1415-01:

- The mandate of the Panel *“will be to provide independent expert advice and recommendations on the design and construction of the road to minimize: traffic-related accidents, road failure or malfunctions, and any resulting significant adverse impacts on human safety or the environment”*.
- The Panel will also *“ensure that the road is designed and constructed to an appropriate standard that is highly protective of people and the environment, including consideration of:*
 - a) *the number and type of mine and non-mine related vehicles expected to use the road;*
 - b) *two-way traffic;*
 - c) *human safety and minimizing traffic related accidents;*
 - d) *permafrost degradation and impacts on water quality; and,*
 - e) *appropriate road design criteria, including but not limited to:*
 - *watercourse crossings, including the Liard River ice bridge;*
 - *right-of-way clearing width;*
 - *road alignment, grades, subgrade width, and road widening at curves;*
 - *cut and fill slopes, cut and fill slope angles, slope stability; and*
 - *number of, physical size of, and distance between vehicle pullouts.”*

To this end, the Panel will define “appropriate standard” and “highly protective”.

Notwithstanding the wording in Measure 5-1 *Part 1: Introduction*, the Panel will not “approve” designs, plans or related documents; the role of the Panel is to provide independent review and comment. Approval of designs, plans and documents lies with the Water Board and Parks Canada.

To complete its mandate, the Panel will consider information, design documents, reports and data that it considers relevant. This could include, but not be limited to, information from EA1415-01, information gathered as a result of CanZinc commitments, and the requirements and outcomes of Review Board measures. The Panel must be supplied with all information they deem necessary to complete their mandate and scope.

4.0 Guiding Principles

The following principles shall guide the Panel's work:

- i. The Panel shall remain impartial to the Project, being neither an advocate nor opposed to it.
- ii. The Panel shall be independent of CanZinc, the regulators and Indigenous groups, including consultants engaged by any party to the project, and shall provide their recommendations impartially based solely on their expertise and experience.
- iii. The Panel will work together collaboratively and in a respectful manner, with a willingness to listen and understand all perspectives/opinions and relevant issues.
- iv. The Panel will be transparent, with all review and assessments based only on sound scientific and engineering principles, and with due consideration of traditional knowledge provided through the review process and consultations.
- v. The Panel recognizes that some design and construction activities of the WAR and ASR may be time sensitive; and some of the Panel's tasks may be on the project schedule's critical path. The Panel shall endeavor to meet all reasonable timelines, however this is also dependent on information requested by the Panel being provided in a timely manner.
- vi. Panel decisions will generally be based on consensus among members. Where consensus cannot be reached, the majority view on a recommendation as well as the minority views of dissenting members will be presented.
- vii. The Panel will work in an efficient manner to complete its mandate in a timely and cost-effective manner.

5.0 Panel Structure/Governance/Operations

5.1 Membership

The Panel shall comprise the following members:

- i. Robert (Bob) Johnson, B.Sc., P.Eng. (AB/NT/NU)
- ii. James (Jim) Oswell, Ph.D., P.Eng. (AB/NT/NU)
- iii. Timothy (Tim) Smith, P.Geo, EngL, P.Geol (AB), LEG (WA), CPESC
- iv. David Watt, B.Sc., R.F.P. (BC)

These members have been nominated by CanZinc and approved by the Water Board and Parks Canada.

The chair of the panel will be Dr. Jim Oswell, with Tim Smith to act as vice-chair, if needed.

5.2 Selection of Replacement or Additional Members

In the event a Panel member is unable to continue, the remaining members shall identify and nominate a replacement to be approved by CanZinc, the Water Board and Parks Canada.

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In the event the Panel recommends additional members be added to address specific technical gaps in the expertise, the Panel shall identify and nominate a person(s) to be approved by CanZinc, the Water Board and Parks Canada. Additional members will be hired by CanZinc.

Where administrative support including clerical, auto-CAD, GIS or other services are needed by the Panel, these may be engaged within the individual offices of the Panel members and billed to CanZinc at agreed upon rates.

5.3 Panel Member Responsibilities

Each member will:

- i. Become familiar with materials provided for review and comment;
- ii. Participate in Panel reviews, discussions, deliberations and in the development of recommendations and the final report;
- iii. Provide advice and recommendations to be included in the reports and memorandums issued by the Panel;
- iv. Attend and participate in meetings, both in person or through conference call or similar technology, as necessary;
- v. Work in an efficient and time-effective manner to complete the tasks and scope of work before the Panel.
- vi. Hold all Panel deliberations and internal discussions in strict confidence.

5.4 Conflict of Interest

Panel members will declare in writing to CanZinc any conflict of interest that may exist or may be seen to exist. Such conflicts may include, but not be limited to:

- i. Financial interests in CanZinc;
- ii. Immediate family members who work for CanZinc or its consultants, the Water Board, Parks Canada, or other significant stakeholders for this Project, or;
- iii. Immediate family members belonging to, or affiliated with, a First Nation or other significant stakeholder associated with this Project.

Where such a conflict may be present, CanZinc will address the conflict in consultation with the Water Board and Parks Canada.

5.5 Confidentiality

The Panel recognizes that information provided by CanZinc may be confidential for legal and/or commercial reasons. Each member will hold all information received by CanZinc in strict confidence for the duration of the project and thereafter as directed by CanZinc, except for an Order to the contrary by a Court or Quasi-Judicial authority.

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The Panel recognizes that all reports, memoranda, documents and communications prepared by the Panel to CanZinc may be made public, unless prior agreement for confidentiality is invoked.

The Panel discussions will be confidential and must not be shared with any non-Panel members. Draft reports, or sections thereof, will also be treated as confidential.

6.0 Reporting and Engagement Process

The Panel will report to CanZinc on its activities. The primary point of contact in CanZinc will be David Harpley, VP, Environment and Permitting Affairs.

The Panel will provide draft reports to CanZinc for review. The Panel will then consider comments, suggestions and changes, before submitting a final report.

CanZinc will be responsible to engage with the Water Board and Parks Canada on the Panel's activities.

CanZinc will provide Panel reports to the Water Board and Parks Canada.

The Panel may communicate directly with third parties, including the Review Board, Water Board, Parks Canada and others. CanZinc will be copied on all written communications, and will be advised by email of verbal communications.

Panel members will use their personal/corporate email address for correspondence related to this review. Reports and memoranda prepared by the Panel will carry "Independent Technical Review Panel" letterhead in the upper left corner of each page, as follows:

"Independent Technical Review Panel
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The attached Schedule A presents the current work plan for the Panel. It is considered a dynamic work plan and scope; some tasks may be amended and additional ones added during the Project.

End of Terms of Reference

Schedule A

The Panel will complete the following activities:

- (1) Prior to the construction of the WAR:
 - a. Prepare and submit the Panel's terms of reference.
 - b. Review and provide comments on the typical and non-typical WAR sections with due consideration of the relevant scope items listed above in Section 3.0 (a) – (e) and to the extent necessary, the following:
 - i. The updated risk assessment (Appendix C, commitment #241);
 - ii. Terrain stability assessment reports (Appendix C, commitment #137) and any additional mitigation required to address instability;
 - iii. Avalanche related information (Appendix C, commitment #114; Suggestion 5-1);
 - iv. Individual detailed borrow site plans and designs (Appendix C, commitment #119);
 - v. Geotechnical, geophysical, permafrost, and hydrological investigations (Appendix C, commitments #129, #156, #232, #235; Measure 12-1; Measure 8-1);
 - vi. The Traffic Control Mitigation and Management Plan (Measure 5-2);
 - vii. Communications plans for road travel
 - viii. Relevant management plans and proposed mitigations;
 - ix. Extreme weather events;
 - x. Climate change; and,
 - xi. Karst features.
 - c. Engage with CanZinc and stakeholders to confirm the Panel's interpretation of "appropriate standard" and "highly protective" as used in Measure 5-1.
- (2) During detailed design of the ASR:
 - a. Assess the appropriate standard for the ASR and levels of acceptable risk.
 - b. Review existing and updated information, work plans, and detailed design documents, including, but not necessarily limited to terrain stability assessments undertaken for the proposed cut and fill slopes, and the CanZinc's detailed interpretation of the permafrost conditions along the ASR route on completion of geotechnical site investigation work; and,
 - c. Provide recommendations for the design to meet the agreed upon standard defined by the Panel, considering construction, operation, maintenance, closure and reclamation.
- (3) Following detailed design of the ASR:
 - a. Review the detailed road design;
 - b. Provide a preliminary report to CanZinc on the Panel's review including additional or outstanding recommendations

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- c. Review CanZinc's response and justification for any recommendations CanZinc does not wish to adopt;
 - d. Prepare and submit a final report to CanZinc that includes the Panel's findings and conclusions on the final road design.
- (4) During construction:
- a. Work with CanZinc and the Review Board to determine the frequency and nature of the Panel's activities during construction (at a minimum, the Panel will be consulted and have the opportunity to revise its final report if any material changes to design are made following submission of the Panel's final report).
- (5) Operations:
- a. Assess and comment on the operational plans for the the ASR, including but not limited to traffic planning and logistics, journey management, road maintenance and repairs, and emergency response planning.