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Environnement Canada

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Our file: 4780 006
Your file: EA0809-002

Alistair MacDonald
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Mackenzie Valley Environmental Impact Review Board
P.O. Box 938
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Via email amacdonald@mveirb.ca

Re: Draft Terms of Reference and Work Plan for the Environmental Assessment of Canadian Zinc Corporation's Proposed Prairie Creek Mine

The above documents have been reviewed on behalf of Environment Canada by the relevant specialists, and the following comments are provided for the consideration of the Mackenzie Valley Environmental Impact Review Board (MVEIRB). Environment Canada (EC) will be providing specialist advice in relation to the protection and conservation of the environment pursuant to its mandated responsibilities arising from the *Canadian Environmental Protection Act* 1999, Section 36(3) of the *Fisheries Act* 1985, the *Metal Mining Effluent Regulations* 2002, *Migratory Birds Convention Act* 1994, and the *Species at Risk Act* (SARA).

Draft Work Plan

The draft work plan and estimated schedule appear reasonable, and although compressed, should provide sufficient time for our participation and reviews. EC supports the use of technical meetings following the first round of Information Requests, and the inclusion of a period following the Public Hearing during which undertakings can be placed on the public record.

Draft Terms of Reference

In general, EC was pleased with the Terms of Reference (ToR) and feels that the document provides good direction for the development of the Developer's Assessment Report.

2.1 Scope of Development

No comments.

2.2 Scope of Assessment

With respect to the temporal scope, EC supports the approach of distinguishing, to the extent possible, between pre-development (prior to the original construction) and the current pre-mining "baseline" conditions. The ToR do not provide direction on how that information is to be used, and this will need to be defined for the determination of effects significance.

The section dealing with long-term temporal boundaries is worded such that the post-closure monitoring of minewater release is implied to be the only aspect requiring long-term monitoring and management. This should be noted as being an example only, to avoid a narrow interpretation.

Section 3.2.4 Description of the Existing Environment

Biophysical Environment – 8)

For clarity, it should be noted that wildlife includes resident and migratory bird species.

Section 3.2.5 Development Description

Under the *Specific Items* section, if the proponent is following specific best management plans, such as those for ammonia or explosives or segregation of wastes, they should be cited. The development of the waste characterization plan should be specified, including analysis of the representativeness of the rock sampling program.

Waste management should have a bullet in the *Specific Items* section, just before bullet 14. This should include full details on impacts and mitigation for the landfill, a landfarm (if proposed), and sewage treatment.

Section 3.3 Impacts on the Biophysical Environment

The fourth bullet under Section 3.3.1 outlines the requirement to identify natural background conditions and current baseline conditions. It is recommended that the ToR include an explicit statement that asks the proponent to show, for each set of conditions, how the full range of natural variability has been characterized in the baseline data.

Section 3.3.1 first bullet, top of page 20. This bullet requires the proponent to identify monitoring and adaptive management plans. EC recommends that the proponent include a draft or conceptual aquatic effects monitoring plan that shows how the proponent will integrate monitoring under the licence (Surveillance Network Program and Aquatic Effects Monitoring), the Metal Mining Effluent Regulations Environmental Effects Monitoring requirements, and any other relevant monitoring, such as under the Fisheries Authorization. When evaluating the potential for effects of a project, it is necessary to confirm that there will be the ability to detect adverse impacts or unpredicted occurrences; thus the need for a good description of the baseline data available, and how it can/will be used to detect effects during the life of the project.

Section 3.3.2

Point 1 b) Historical observations of water pH and sulphate may be useful in interpreting the results. The later constituent is often a precursor to the emergence of acidic drainage. As well, this item should include nutrients; EC recommends replacing “ammonia” with “nutrients”.

Point 4 To arrive at effluent quality predictions, the source constituents will have to be identified and predicted for all discharge sources.

The risk assessment generally covers the concerns with effluent discharge; however, rather than asking for estimates of dilution effects it is suggested that this be termed plume behaviour. EC recommends that the proponent be asked to provide estimates of mixing behaviour and estimate where the plume would be predicted to be sufficiently mixed that there is no chronic toxicity.

Point 7 requires a discussion of the adequacy of the new water treatment facilities, and asks for emphasis on the ability to handle greater than expected flows. EC recommends broadening this requirement beyond flow contingencies to include higher than predicted concentrations of contaminants in effluent and/or other treatment upsets. How will the company demonstrate that their proposed treatment processes can minimize the extent affected by effluent discharge?

Point 8 e) Contingency treatment plans should be included along with a thorough evaluation of effluent treatment.

Section 3.3.3

Point 2 outlines the requirement for contingency plans to be identified; EC recommends that the DAR include preliminary drafts of all such plans.

Section 3.3.6 Wildlife and Wildlife Habitat

For clarity, it should be noted that wildlife includes resident and migratory bird species.

Section 3.3.8 Air Quality

EC agrees with the content of Section 3.3.8, but we suggest reorganizing this section to increase clarity. Information needed to complete an air assessment falls under the following categories: predevelopment conditions; potential impacts from the project; potential cumulative impacts; and monitoring, mitigation and adaptive management strategies. EC, in consultation with ENR (GNWT), have prepared an air quality ToR template for the Board's consideration, please see Appendix A. The template includes guidance from the draft ToR plus additional items to address cumulative impacts and contaminant loading. For completeness, the potential of cumulative impacts should be discussed in the DAR. The project is a lead/zinc mine, therefore the potential for contaminant loading from the handling and transport of raw ore and concentrate needs to be assessed. Please note that concern for contaminant loading prompted the MVLWB to include the development of a contaminant loading management plan as a condition of the Tamerlane Water Licence (MV2006L2-0003).

The air quality ToR provided in Appendix A is developed as a general template that can be modified and used for other projects.

Section 3.5 Closure and Reclamation

The closure and reclamation guidelines by INAC, to which it is suggested CZN refer to when developing this reclamation plan, should be formally referenced, including their source.

Point 2 b) The components and activities listed as requiring closure and reclamation should be clearly identified as all the project components and activities scoped into the assessment.

Point 3 The proponent should also assess the physical integrity of permanent features, including effects of river erosion, seismic activity, landslides, and extreme precipitation and runoff.

Section 2.2.3 and 3.6 Cumulative Effects

The sections on cumulative effects are generally acceptable, however it should be noted that Section 2.2.3 references seeing Section 3.2.7 for more detail. There is no Section 3.2.7.

Impacts of the Environment on the Project:

This aspect is mentioned only in connection with the water quality section (3.3.2 Item 8) and the NNPR section (3.3.3 Item 2). There should be an overarching assessment of effects of the environment on the project. This should include climate change, the effects of seismicity, precipitation and freezing conditions on the operations of the project, and extend from operations through closure planning. In particular, seismic activity (Earthquakes) is mentioned in section 3.3.7. part 2d) in which the proponent is to evaluate the potential impacts of the proposed operations. However, seismic activity could also be mentioned in section 3.3.2, part 8 b) for their direct effects on mining components including water retention structures, mill operations, transportation corridor and waste disposal piles; and in section 3.3.3 part 4 seismic activity could be considered in assessing risk along the transportation corridor.

Please do not hesitate to contact me with any questions or comments with regards to the foregoing at (867) 669-4735 or by email at anne.wilson@ec.gc.ca.

Yours truly,

Original signed by

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Water Pollution Specialist
Environment Canada

cc: Carey Ogilvie, (Head, EA-North, Environment Canada, Yellowknife)
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Glenn Groskopf (Mining Project Officer, EC, Regina)
Mike Fournier (EPOD, Yellowknife)
Loretta Ransom (ENR, GNWT)

Appendix A

3.3.8 Air Quality

The Developer's Assessment Report will evaluate the Prairie Creek Mine's potential impacts on air quality due to project emissions. While considering impacts and mitigation on air quality, Canadian Zinc is encouraged to enter dialogue with Environment Canada and the GNWT about appropriate methods for modeling air quality and strategies for minimizing air quality impacts.

While assessing impacts on air quality, consideration shall be given to:

1. Pre-development conditions including:
 - a. General climatology (typical temperatures, precipitation, air flows, etc.), terrain type and topography; and
 - b. Baseline ambient concentrations of criteria air contaminants (TSP, PM₁₀, PM_{2.5}, NO_x, SO₂, CO)
2. Potential impacts from project emissions during construction, operation and closure phases:
 - a. Estimate emissions from all project sources including combustion sources and fugitive dust;
 - b. Predict local and regional dispersion of the project emissions and resulting ambient concentrations and deposition of pollutants;
 - c. Compare predicted ambient concentrations and deposition rates to relevant ambient air quality guidelines and standards;
 - d. Discuss potential sources of contaminant loading of metals (lead, zinc, etc.) such as the handling and transport of raw ore and concentrate; and
 - e. Discuss potential links between predicted air quality impacts to other media such as water quality, fish, wildlife and human health;
3. Cumulative impacts to air quality:
 - a. Identify any emission sources outside of the project which may impact air quality in this region; and
 - b. Estimate cumulative impacts to air quality from both project and non-project emissions;
4. Monitoring, mitigation and adaptive management strategies:
 - a. Use predicted ambient air quality concentrations to design an appropriate monitoring program and to develop mitigation and adaptive management strategies to minimize emissions of criteria air contaminants;
 - b. Describe specific mitigation and adaptive management strategies to minimize contaminant loading by fugitive dust from the handling and transport of raw ore and concentrate; and
 - c. Describe specific mitigation and adaptive management strategies to minimize incineration emissions and to ensure compliance with Canada-wide Standards for Dioxins and Furans and Canada-wide Standards for Mercury emissions.