

EA1415-01
Prairie Creek All Season Road
Canadian Zinc Corporation

May 23, 2014

To: Alan Taylor
VP Exploration, Chief Operating Officer.
Canadian Zinc Corporation
Suite 1710-650 West Georgia Street
Vancouver, BC V6B 4N9

Via email: alan@canadianzinc.com

Re: Notice of referral to environmental assessment, Prairie Creek All Season Road and Airstrip, Canadian Zinc Corporation, EA1415-01

On May 22, 2013 the Mackenzie Valley Land and Water Board referred your applications and project description for an all season road and airstrip (MV2014F0013, MV2014L8-006) to environmental assessment by the Mackenzie Valley Environmental Impact Review Board (Review Board), pursuant to paragraph 126(2)(a) of the *Mackenzie Valley Resource Management Act* (MVRMA).

The Review Board has created a public registry for this file (EA1415-01), where all information will be held. The public registry is available online at www.reviewboard.ca/registry. Details of the assessment process are described in the Review Board's *Environmental Impact Assessment Guidelines*, available on our website.

With this notice of referral, the Review Board is providing you with a document titled *Guidance for Developer's Proposed Terms of Reference*. Please prepare a *Developer's Proposed Draft Terms of Reference* for your project based on this guidance document. The Review Board will distribute the *Developer's Proposed Terms of Reference* for public comment, and in the interests of a timely process, will host community and technical issues scoping meetings during this same time period.

The Review Board will then prepare its own *Draft Terms of Reference* based on information collected from scoping meetings and comments received. The Review Board believes that this



approach will result in a final *Terms of Reference* completed in a timely and expeditious manner with early input from Canadian Zinc Corporation.

Please contact Sachi De Souza at (867) 766-7054 or sdesouza@reviewboard.ca with any questions regarding the Guidance document or next steps.

Regards,

JoAnne Deneron
Chairperson

Mackenzie Valley
Review Board



**Guidance for
Developer's Proposed Terms of Reference
Prairie Creek All Season Road and Airstrip**

Mackenzie Valley Review Board

200 Scotia Centre

P.O. Box 938

Yellowknife, NT

X1A 2N7

Tel: (867) 766-7050

Fax: (867) 766-7074

TABLE OF CONTENTS

1	INTRODUCTION.....	4
1.1	Overview.....	4
1.2	The Initial Process.....	4
1.3	Background.....	5
1.4	Referral to environmental assessment.....	5
1.5	Legal context and the Terms of Reference development process.....	5
2	DEVELOPER’S ASSESSMENT REPORT GENERAL REQUIREMENTS.....	5
2.1	Presentation of Material.....	5
2.2	Incorporation of Traditional Knowledge.....	5
2.3	Public engagement.....	5
2.4	Summary materials.....	6
3	SCOPE CONSIDERATIONS.....	6
3.1	Scope of development.....	6
3.2	Scope of Assessment.....	6
	3.2.1 Overview.....	6
	3.2.2 Effects Assessments – Valued Components.....	6
	3.2.3 Key Lines of Inquiry.....	7
3.3	Geographic Scope of Assessment.....	7
3.4	Temporal Scope of Assessment.....	7
3.5	Consideration of Alternatives to the Development.....	7
4	ASSESSMENT METHODOLOGY.....	8
4.1	Impact Assessment Steps.....	8
5	DESCRIPTION OF THE EXISTING ENVIRONMENT AND BASELINE CONDITIONS.....	8
5.1	Biophysical information requirements.....	8
	5.1.1 Terrain, geology, soils, and permafrost.....	8
	5.1.2 Climate.....	8
	5.1.3 Water quality and quantity.....	9
	5.1.4 Fish and aquatic habitat.....	9
	5.1.5 Wildlife and wildlife habitat.....	9

5.1.6	<i>Vegetation</i>	9
5.2	Human environment baseline information requirements.....	10
5.2.1	<i>Education, training, and skills</i>	10
5.2.2	<i>Harvesting</i>	10
5.2.3	<i>Land use</i>	10
5.2.4	<i>Heritage resources</i>	10
5.2.5	<i>Tourism</i>	10
5.2.6	<i>Regional and local economies</i>	11
5.2.7	<i>Existing transportation routes and related infrastructure</i>	11
6	DEVELOPMENT DESCRIPTION	11
6.1	Project components and activities	11
6.2	Construction phases and schedule.....	12
6.3	Existing infrastructure and facilities	12
6.4	Existing Management Plans	13
7	ASSESSMENT OF ENVIRONMENTAL IMPACTS AND CUMULATIVE EFFECTS.....	13
7.1	Effects Assessment	13
7.2	Key Components of Interest	13
7.2.1	<i>Harvesting</i>	13
7.2.2	<i>Terrain, soils, permafrost, and karst topography</i>	14
7.2.3	<i>Granular Materials</i>	14
7.2.4	<i>Air quality</i>	14
7.2.5	<i>Noise</i>	14
7.2.6	<i>Water quality and quantity</i>	14
7.2.7	<i>Species at risk and species of concern</i>	15
7.2.8	<i>Fish and aquatic habitat</i>	15
7.2.9	<i>Wildlife and wildlife habitat</i>	15
7.2.10	<i>Vegetation</i>	16
7.2.11	<i>Land use</i>	16
7.2.12	<i>Traditional Land Use</i>	16
7.2.13	<i>Employment and Benefits to the Community</i>	17
7.2.14	<i>Impacts on existing transportation infrastructure</i>	17

*7.2.15 Ecological Integrity, Cultural Resources (also known as heritage resources) and
Visitor Experience of Nahanni National Park Reserve 17*

8 EFFECTS OF THE ENVIRONMENT ON THE PROJECT 18

9 POTENTIAL ACCIDENTS AND MALFUNCTIONS 18

10 CUMULATIVE EFFECTS ASSESSMENT 18

11 FOLLOW-UP AND MONITORING 19

12 CLOSURE AND RECLAMATION 19

13 CONCLUSION..... 19

Note: This document is structured on the anticipated sections in the Terms of Reference. Certain components of the Terms of Reference are driven by the responsibilities of the Review Board through the Mackenzie Valley Resources Management Act (the Act) and the process described for completing an environmental assessment. These areas are not contingent on the information brought forth by the developer. These sections have been written in blue and should not be edited by the developer. Sections in black are sections which will be the focus of discussion between Canadian Zinc Corporation, the Review Board and parties to the environmental assessment and require the project specific knowledge of Canadian Zinc Corporation.

The developer will consider Parks Canada's Project Description for an All Season Road and Airstrip when drafting the Developer's Proposed Terms of Reference, as portions of the development are proposed within Nahanni National Park.

1 INTRODUCTION

1.1 Overview

Canadian Zinc Corporation (CanZinc or the developer) is proposing to construct a 170 km all-weather road and air strip to access the Prairie Creek mine (herein referred to as the project or the development). The purpose of this *Guidance for the Developer's Proposed Terms of Reference* is to help Canadian Zinc Corporation (CanZinc) with its formulation of the *Developer's Proposed Terms of Reference*. It outlines, in general terms, the information required for the environmental assessment of the Prairie Creek all season road project.

The Mackenzie Valley Environmental Impact Review Board (the Review Board) has prepared this document to expedite the process by 1) encouraging CanZinc to submit its *Developer's Proposed Terms of Reference*, and 2) describing the information that the Review Board is hoping to obtain through the environmental assessment process, accelerating the environmental assessment process as a whole. The Review Board will consider the *Developer's Proposed Terms of Reference* along with other evidence when drafting its final Terms of Reference, and may include other items beyond those proposed by the developer.

1.2 The Initial Process

The steps from the present point to the submission of the *Developer's Assessment Report (DAR)* are as follows:

1. Based on the guidance in this present document, the developer will prepare the *Developer's Proposed Terms of Reference (DPToR)*.
2. The *Developer's Proposed Terms of Reference* will frame scoping activities, and will be considered by the Review Board when preparing its *Draft Terms of Reference* for the Environmental Assessment.
3. Following scoping activities and party comments, the *Review Board's Draft Terms of Reference* will be finalized. The final *Terms of Reference* will provide direction to the

developer on how to organize existing information, and conduct additional study and analysis as appropriate, in order to submit a stand-alone DAR.

4. The DAR will then be used to inform all interested parties about the developer's views of the potential impacts of the proposed development during the analytical phase of the environmental assessment.¹

1.3 Background

In the DPToR please provide a summary of the project setting including:

- the history of the CanZinc Mine
- how the current all season road proposal differs from the winter road proposed in the previous environmental assessment
- the percentage change in surface area needed for the road and related activities
- figures outlining the proposed route(s)

1.4 Referral to environmental assessment

To be populated by the Review Board.

1.5 Legal context and the Terms of Reference development process

To be populated by the Review Board.

2 DEVELOPER'S ASSESSMENT REPORT GENERAL REQUIREMENTS

2.1 Presentation of Material

To be populated by the Review Board.

2.2 Incorporation of Traditional Knowledge

Where it is applicable, the developer will make all reasonable efforts to incorporate traditional knowledge from Aboriginal culture holders into the DPToR. The developer should refer to the Review Board's *Guidelines for Incorporating Traditional Knowledge into the Environmental Impact Assessment Process*.

2.3 Public engagement

Engagement with communities, other Aboriginal groups, other governments, or other organizations with interests related to areas that might be affected by the project will help inform the DPToR. To assist with public engagement, the developer should refer to guidance provided in the Mackenzie Valley Land and Water Board's *Engagement and Consultation Policy*.

¹ The role of the Developer's Assessment Report and associated next steps in the environmental assessment are identified in the Work Plan issued by the Review Board as a companion document to the Terms of Reference.

2.4 Summary materials

The following summary materials will be required in the Developer's Assessment Report (DAR):

- plain language summary in English and South Slavey
- a concordance table that cross references the items in the Terms of Reference with relevant sections of the DAR
- a commitments table listing all mitigation measures the developer will undertake, including but not limited to those described in the project application.

3 SCOPE CONSIDERATIONS

3.1 Scope of development

Under Subsection 117(1) of the MVRMA, the Review Board determines the scope of development for every environmental assessment it conducts. The scope of development consists of all the physical works and activities required for the project to proceed. Within this project the scope of development includes the construction, operation, reclamation, and closure of the all season road and the air strip. The road and airstrip are expected to be utilized during the construction, operation, closure, and reclamation of the Prairie Creek Mine.

The DAR will fully describe all required facilities and activities for the development. In addition, the developer will identify all permits, licences or other regulatory approvals necessary for the different phases of the development, and all land tenure agreements required. The Review Board may amend the scope of development at any time during the environmental assessment if the proposed development changes.

For the DPTOR, please list the specific components and activities of the project as well as the spatial and temporal extent of the project.

3.2 Scope of Assessment

3.2.1 Overview

The scope of assessment defines which issues will be examined in the environmental assessment. This includes all potential impacts on valued components of the biophysical and the human environment (for example, wildlife species or social concerns) from the development, by itself and in combination with other past, present and reasonably foreseeable future developments.

3.2.2 Effects Assessments – Valued Components

Below is a preliminary list of valued components to be used in the assessment of impacts from the project on biophysical, social, economic, and cultural values. The list below is not exhaustive and should be amended and populated based on site-specific information from CanZinc.

- Harvesting
- Terrain, soils, permafrost, and karst topography

- Granular materials
- Air quality
- Noise
- Water quality and quantity
- Species at risk and species of concern
- Fish and aquatic habitat
- Wildlife and wildlife habitat
- Vegetation
- Land Use
- Traditional land use
- Ecological Integrity, Visitor Experience and Cultural Resources (also known as heritage resources) of Nahanni National Park Reserve
- Employment and benefits to the community
- Impacts on existing transportation infrastructure

3.2.3 Key Lines of Inquiry

In preparing the DPToR, the developer should provide its views on what the key lines of inquiry should focus on, and the reasons for the components selected. These should be identified from the list of valued components listed above in Section 3.2.2 as well as others that have not been identified.

3.3 Geographic Scope of Assessment

In the DPToR, please specify the geographic scope for each valued component and provide justification and rationale for all study area boundaries chosen.

3.4 Temporal Scope of Assessment

In the DPToR, please specify the temporal scope for each valued component and provide justification and rationale for the scope chosen.

3.5 Consideration of Alternatives to the Development

In the DAR, the developer will describe the alternatives to achieve the same objective (reliable access to the Prairie Creek Mine). The analysis of alternative methods will take into account the *Multiple Accounts Analysis (MAA)* described by Roberson and Shaw (2004)². The alternatives analysis should include technical feasibility, economic viability, socio-economic effects, and environmental effects. The alternatives will be ranked with an explanation behind the ranking and why certain alternatives were rejected.

In the DPToR, please list the alternatives to the major project components considered. Alternatives within the project will be addressed in Section 6.

² See guidance at http://technology.infomine.com/enviromine/issues//cls_maa.html

4 ASSESSMENT METHODOLOGY

4.1 Impact Assessment Steps

To be populated by the Review Board.

5 DESCRIPTION OF THE EXISTING ENVIRONMENT AND BASELINE CONDITIONS

In the DAR, the developer will provide a description of existing conditions in sufficient detail to enable the Review Board and parties to understand how the valued components might be affected by the proposed development. The existing conditions should be described for the study area - the area affected by the development.

The Terms of Reference will describe how the following topics (Sections 5.1.1 to 5.2.7) will be addressed in the DAR. The following subsections provide a framework for each topic but require additional site-specific information. CanZinc should add subjects and details to the preliminary list below, based on its detailed knowledge of site-specific conditions and of the proposed development. If CanZinc deems any of the following topics or items inapplicable, it will provide a written justification.

5.1 Biophysical information requirements

5.1.1 *Terrain, geology, soils, and permafrost*

In the DAR, the existing terrain, geology, soils and permafrost in the study area will be summarized. Subjects to consider include:

- topography, geology, bedrock, unconsolidated surficial materials and terrain types, and soil types
- borrow materials (including permafrost and ownership)
- permafrost and ice-rich soils in the area of the all season road and regional climate and ground temperature changes

In the DPToR, please provide additional detail on how the baseline for the terrain, geology, soils, and permafrost will be established.

5.1.2 *Climate*

In the DAR, the existing or baseline climate conditions and climatic variability and trends will be described. The description of baseline conditions will be presented in a manner that reflects the potential variability and facilitates subsequent discussion of how changes in climate could change the project or particular project components. In the DPToR, please describe how the climatic baseline will be established.

5.1.3 Water quality and quantity

In the DAR, a description and maps of the existing water resources, major drainages and watercourses will be included. For each major drainage or major watercourse, as appropriate, this will consist of a detailed description of its hydrological characteristics. In the DPToR, please provide additional detail regarding how the water quality and quantity baseline will be established.

5.1.4 Fish and aquatic habitat

In the DAR, the existing fish and aquatic habitat in the study area will be summarized. Subjects to consider include:

- a description of fish habitat present at each of the planned water crossings
- fish species
- seasonal and life cycle movements and sensitive periods
- habitat requirements for each life stage
- local and regional abundance, distribution and use of habitat types and known sensitive or important areas
- harvest pressures (subsistence and sport fishing) by species, season and geographic area.

In the DPToR, please provide additional detail on how the baseline for fish and aquatic habitat will be established.

5.1.5 Wildlife and wildlife habitat

In the DAR, the existing wildlife³ and wildlife habitat within the study area will be summarized. Subjects to consider include:

- wildlife species presence, distribution and abundance, seasonal movements, habitat requirements and sensitive time periods
- species of importance to subsistence harvesters and to the guiding or outfitting industries
- species sensitive to harvest pressures
- habitat types and sites of special value or sensitivity
- migratory patterns, routes, and timing in relation to all season road route alternatives, construction activities, and operation
- existing invasive species.

In the DPToR, please provide additional detail on how the baseline for wildlife and wildlife habitat will be established.

5.1.6 Vegetation

In the DAR, a description of the existing vegetation within the study area will be summarized. Subjects to consider include:

- vegetation and vegetation assemblages

³ Including birds

- identification of rare species or assemblages
- human use and merchantable timber
- existing invasive species
- frequency of forest fires and post-fire succession.

In the DPToR, please provide additional detail on how the baseline for vegetation will be established.

5.2 Human environment baseline information requirements

5.2.1 Education, training, and skills

In the DAR, a description of the education, skills and training levels in the communities relevant to the road, including graduation and achievement rates including high school or higher, and trade certification levels will be summarized. In the DPToR, please provide additional information on how the baseline for education, training, and skills will be assessed.

5.2.2 Harvesting

In the DAR, a description of current and traditional harvesting, focusing on subsistence and commercial harvesting, including harvesting activities and other traditional uses by Aboriginal peoples within study area will be summarized. This will include harvest levels, participation, and locations. In the DPToR, please elaborate on how the baseline harvesting environment will be established.

5.2.3 Land use

In the DAR, traditional and current land use patterns, designations and special management areas in study area will be summarized. Subjects to consider include:

- land status, uses, and designations
- valued aesthetic locations and their attributes
- lands and features of special interest or value.

In the DPToR, please provide additional detail on how the baseline for land use will be established.

5.2.4 Heritage resources

In the DAR, the existing archaeological, paleontological, and historic resources, collectively referred to here as heritage resources, will be summarized. Within the study area, this will account for archaeological, paleontological, historical, and culturally important sites. This will include the value of the sites themselves as well as the heritage resource potential. In the DPToR, please elaborate on how the heritage resources will be addressed.

5.2.5 Tourism

In the DAR, a description of the current tourist activity in the study area and revenue generated as a result of tourism in the region will be provided. Specific attention will be given to the revenue

generated both directly and indirectly by Nahanni Butte. In the DPToR, please elaborate on how existing tourism in the region will be summarized.

5.2.6 Regional and local economies

In the DAR, a description of the local and regional economies and their performance will be summarized. Subject to consider include:

- employment rate
- employment by industry and occupation, including occupations related to traditional activities
- job vacancy and unfilled positions, labour force growth, participation and balance between wage and non-wage sector activities and earnings growth.

In the DPToR, please provide additional detail on how baseline economic conditions will be established.

5.2.7 Existing transportation routes and related infrastructure

In the DAR, a description of the local and regional infrastructure, including fuel services, road transportation routes including current usage, and navigable water routes, will be presented. In the DPToR, please detail how the existing transportation routes and related infrastructure will be described.

6 DEVELOPMENT DESCRIPTION

The developer will fully describe the facilities and activities associated with all phases of the development, including a discussion of the need for the project, alternative methods of carrying out the project, and development schedule.

6.1 Project components and activities

The project includes three distinct components: construction and operation of an all season road, construction and operation of transfer facilities along the road, and construction and use of an air strip. A commentary on the alternative means to complete each of these components will be included. Alternative means encompasses the potential road alignments.

In addition, the DPToR will include a summary of how the project components and activities will be described. Topics to consider include:

- design standards
- land requirements (footprint, location, permanent or temporary, ownership, zoning)
- right of way clearing
- road construction methods
- water crossing structures and locations
- alterations to stream flow
- borrow source locations, quality and quantities, activities and methods

- temporary winter or all-season access roads to borrow areas
- camps, staging areas, laydown areas, access roads and other support facilities
- fuel storage and management
- explosives manufacturing plant, storage, transportation, and use
- toxic or hazardous materials to be used
- equipment requirements (by phase)
- solid, liquid, and gas waste management
- water use
- wastewater treatment
- mobilization and demobilization (this should include a discussion of related activities and land requirements which are necessary for construction but not a part of the project)
- frequency of vehicle and aircraft movement during construction
- routine maintenance activities
- expected traffic volumes during operational phase
- clean-up and restoration of work areas during construction phase
- reclamation
- procurement and implementation approach
- training, employment and business opportunities
- ongoing operations and maintenance of the all season road
- land ownership and jurisdiction
- land requirements including footprint, location, permanent or temporary, ownership, and zoning.

6.2 Construction phases and schedule

In the DAR, the development description will contain an overall activity schedule for the development which outlines the scheduling and duration of each activity. This will include timelines and contingencies for the timing for each project activity during the construction, operation, and closure. Please provide additional detail on how the construction phases and scheduling will be presented.

6.3 Existing infrastructure and facilities

In the DAR, a description of previously assessed, existing, and approved facilities that are to be used as part of the project will be presented. Subjects to consider include:

- infrastructure and facilities, including
 - operation of the airstrip, frequency of use, type of aircraft, and estimated number of passengers and volume of material
 - use of existing roads and highways
- how it will be used in the context of the proposed development
- capacity of existing facilities and infrastructure to handle the proposed development

- any changes to the existing infrastructure or facilities that will occur as a result of the project.

In the DPToR, please provide additional detail on how the use of existing infrastructure and facilities will be presented.

6.4 Existing Management Plans

As part of the environmental assessment, the Review Board will assess the adequacy of existing monitoring programs with respect to detecting and preventing potential significant adverse impacts from developing. In the DPToR, please provide a list and the status of existing monitoring and management plans.

7 ASSESSMENT OF ENVIRONMENTAL IMPACTS AND CUMULATIVE EFFECTS

7.1 Effects Assessment

To be populated by the Review Board.

7.2 Key Components of Interest

The following section outlines valued components to be investigated and topics to consider within the investigation in the DAR. In the DPToR, CanZinc will amend this section given its site specific knowledge and will be cognizant of the effects of construction, operation, and closure periods.

The Terms of Reference will describe how the following topics (Sections 7.2.1 to 7.2.14) will be addressed in the DAR. The following subsections provide a framework for each topic but require additional site-specific information. CanZinc should add subjects and details to the preliminary list below. If CanZinc deems any of the following topics or items inapplicable, it will provide a written justification.

7.2.1 Harvesting

The DAR will describe and list the potential effects of the project on caribou, moose, and sheep and the effect on harvesting. This section will also include any impacts to harvesting of other species. This will include an examination of:

- sensitive or important areas or habitat
- direct and indirect alteration of habitat
- sensory disturbance and predicted changes in behaviour (including habitat avoidance and effective habitat loss in relation to all season road facilities or activities), energetics, health and condition
- wildlife movement patterns, home ranges, distribution and abundance
- wildlife mortality due to harvesting and vehicle collisions
- disruption of sensitive life stages or habitat (e.g., migration, calving, denning, overwintering)

- population cycles, predator-prey relationships and increased human-wildlife interactions
- changes in access, including increased access to the land and surrounding waters.

7.2.2 Terrain, soils, permafrost, and karst topography

The DAR will describe and list the potential effects of the project on terrain, geology, soils, permafrost, and karst topography. Topics to consider include:

- slope and soil stability, erosion and subsidence
- karst topography
- thaw slumps, compaction of organic peat lands, and potential for melt of ice rich ground
- snow distribution, drainage, and avalanches.

7.2.3 Granular Materials

The DAR will describe granular materials required for the proposed project. Topics to consider include:

- locations and volumes of material from each proposed borrow site
- potential for excavation and use of hot rocks
- measures to limit the effect on the surrounding environment
- excavation requirements.

7.2.4 Air quality

The DAR will describe and list the potential effects of the project on air quality. Topics to consider include:

- dust and carbon emissions from vehicles, equipment and stationary sources
- emissions by source for each phase, including quantity, timing and duration, normal operation conditions and upsets
- how changes in air quality could have an impact on humans, wildlife and vegetation.

7.2.5 Noise

The DAR will describe and list the potential effects of the project on noise. Topics to consider include:

- road components and activities that could produce undesirable noise levels including source location, timing and duration
- sensory disturbance to fish, birds and wildlife, including caribou and moose
- disturbance of harvest and recreational activities, including tourism
- potential impacts to wildlife harvesting activities and impacts to communities.

7.2.6 Water quality and quantity

The DAR will describe and list the potential effects of the project on water. Topics to consider include:

- changes to surface drainage patterns and surface water hydrology
- alterations to streamflow
- hydrogeological resources
- possible contamination to surface water and groundwater
- drinking water quality for humans and wildlife
- discharge or seepage of wastewater effluent, contaminants, chemical additives, etc.
- changes to water quality at water crossings (bridges, culverts and other wetted areas)
- changes to water quality due to thaw slumps and other slope instability at water crossing
- erosion, sediment deposition, sediment re-suspension
- related impacts on sediment quality.

7.2.7 Species at risk and species of concern

The DAR will identify the species at risk and species of concern⁴, and identify the adverse effects of the project on *Species at Risk Act* and *Species at Risk (NWT) Act* listed wildlife species and critical habitat. Topics to consider include:

- the geographic extent of the species
- the timing and duration of key life cycle stages
- methods to minimize the effects of the project on the species.

7.2.8 Fish and aquatic habitat

The DAR will describe and list the potential effects of the project on fish and aquatic habitat. Topics to consider include:

- alteration or loss of fish distribution, abundance and habitat (including riparian areas) due to development activities during all project phases
- effects of proposed watercourse crossings and temporary vehicle crossing methods
- relevant policies, management plans or other measures to protect or enhance fish and aquatic habitat, including timing restrictions, protected areas or regulations
- sensitive or important areas
- blockages to movement and effects of water withdrawal
- potential for increased fishing
- reclamation

7.2.9 Wildlife and wildlife habitat

The DAR will describe and list the potential effects of the project on wildlife (including birds) and wildlife habitat. Topics to consider include:

- impacts on distribution and abundance, movements and home ranges
- direct and indirect alteration of habitat including direct road footprint impact

⁴ Refer to both the Government of Canada (http://www.sararegistry.gc.ca/default_e.cfm) and Government of the Northwest Territories (<http://www.nwt-species-at-risk.ca/>) guidance

- habitat fragmentation and barriers to movement and gene flow
- visual or auditory disturbance and effective habitat loss
- effects of construction and pre-construction activities, including aircraft
- wildlife mortality due to harvesting and collisions
- changes to species distribution and abundance
- disruption of sensitive life stages
- important areas or habitat
- population cycles and predator-prey relationships
- increased human-wildlife conflicts (e.g. bear encounters)
- location of raptor nesting sites within 1km of the proposed road
- Use of the project area by birds protected by the *Migratory Birds Convention Act, 1994*
- how road-related changes in harvest pressures could impact the resource
- ability of habitat or species to recover
- response to edge effects
- invasive species (vegetation and wildlife)

7.2.10 Vegetation

The DAR will describe and list the potential effects of the project on vegetation. Topics to consider include:

- alteration or loss of species or vegetation assemblages that are rare, valued, protected or designated sensitive areas, important areas, or habitat
- amount of merchantable timber removed and potential for facilitating use by communities
- vegetation clearing, invasive species, road emissions and dust
- changes to the soil, hydrological or permafrost regimes related to vegetation changes and right of way clearing
- re-establishment of vegetation and reclamation of borrow sites and other disturbances.

7.2.11 Land use

The DAR will describe and list the potential effects of the project on land use. Topics to consider include:

- effects and management of increased access
- effects to traditional land use, tourism, hunting, fishing, recreation and other non-traditional uses
- effects to protected areas, parks, and environmentally and culturally sensitive areas
- aesthetics
- potential effects to other valued components.

7.2.12 Traditional Land Use

The DAR will describe and list the potential effects of the project on traditional land use (beyond those described in response to the discussion of impacts on harvesting). Topics to consider include:

- traditional lifestyles, values and culture
- cultural and spiritual sites and activities.

In addition, the DAR will describe activities taken with community members to ensure that all cultural sites along the route have been identified. The developer will describe its degree of confidence that it has identified all such sites, along with the underlying rationale for this.

7.2.13 Employment and Benefits to the Community

The DAR will describe and list the potential effects of the project on the community. Topics to consider include:

- direct and indirect employment opportunities generated by the development and the potential for uptake of these opportunities locally by aboriginal peoples
- employment and income for every year of construction and operation, with particular reference to wage and salary employment by length of employment, form of employment (full time, part time, seasonal), and skills category
- measures, plans and commitments for maximizing local aboriginal employment and businesses
- maximizing local aboriginal participation in contractor and sub-contractor business opportunities
- effects on capacity of local businesses to service other sectors during the construction phase
- timing and duration of education and skills development programs that would be required for road-related employment
- proposed education and training programs required for road-related construction and operation employment.

7.2.14 Impacts on existing transportation infrastructure

The DAR will describe and list the potential effects of the project on existing transportation infrastructure. Topics to consider include:

- effects on regional roads and highways to the all season road from increased traffic during the construction and operation of the all season road
- effects on existing water crossings (i.e. barges).

7.2.15 Ecological Integrity, Cultural Resources (also known as heritage resources) and Visitor Experience of Nahanni National Park Reserve

In addition to the evaluation above, the DAR will also evaluate potential effects in the context of Parks Canada's legislated and mandated priorities. This evaluation should consider impacts to ecological integrity, visitor experience and cultural resources.

8 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

The DAR will describe and list the potential effect of the environment on the project. Topics to consider include:

- long-term climate change scenarios⁵ (e.g., loss of permafrost, increased evaporation and evapotranspiration, greenhouse gas emissions)
- how changes in permafrost are likely to affect the amount the granular material required for care and maintenance of the all season road
- short-term climatic and extreme weather events
- flooding, landslides and ground movement, changes in permafrost regime, subsidence, seismic activity, avalanches and fire.

In the DPToR, please outline additional effects of the environment on the project which will be discussed in the DAR.

9 POTENTIAL ACCIDENTS AND MALFUNCTIONS

The DAR will describe and list how potential accidents and malfunctions for each phase will be assessed and addressed. Tasks completed for the DAR will include:

- a risk assessment using best practices⁶ for the development including components, systems, hazards, and failure modes
- an assessment of the likelihood and severity of each risk identified, integrating combined ecological, social and economic costs of accidents and malfunctions
- a description of contingency plans for accidents, malfunctions, or unforeseen impacts of the environment on the development and the development on the environment
- a description of emergency response plans that will be in place.

For each project phase, accidents and risks to consider include:

- concentrate spills, fuel spills, and resulting contamination of soil and water
- explosion and/or fire
- transportation accidents (air, land, water).

10 CUMULATIVE EFFECTS ASSESSMENT

The Review Board is required to assess the cumulative effects of the proposed development. In the DPToR, a description of which subjects will be considered by CanZinc for the cumulative effects assessment should be included. Particular attention should be given to the key lines of inquiry identified in Section 3.2.3.

⁵ See the Intergovernmental Panel on Climate Change's most recent assessment report at <http://www.ipcc.ch/report/ar5/>

⁶ See http://www.robertsongeoconsultants.com/rgc_enviromine/issues/cls_fmea-2.html

11 FOLLOW-UP AND MONITORING

A summary of the follow up and monitoring considerations for the project will be included in the DAR. "Follow-up" means a program for verifying the accuracy of the environmental assessment of a project and determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project. Topics to consider include:

- The regulatory and non-regulatory monitoring requirements for the life of the project
- Use of an adaptive management process

The developer is encouraged to discuss and adopt common data collection and monitoring protocols with local and regional monitoring programs including GNWT-Wildlife to facilitate project impact analysis. In addition, the developer is encouraged to use management response plans to accomplish adaptive management. Guidance on a management response framework, how to link monitoring results to management decisions, and how management activities are developed adaptively in response to changes in the environment can be found in the Wekeezhi Land and Water Board document *Guidelines for Adaptive Management – a Response Framework for Aquatic Effects Monitoring. Draft. Oct 17, 2010.*

In the DPToR, please detail how follow-up and monitoring will be addressed in the DAR.

12 CLOSURE AND RECLAMATION

The developer will provide a framework for the conceptual closure and reclamation of the project. Guidance on reclamation is provided in the Mackenzie Valley Land and Water Board – Aboriginal Affairs and Northern Development Canada's *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and the Mine Sites in the Northwest Territories*⁷.

13 CONCLUSION

The Review Board anticipates that the requirements described in the Terms of Reference will produce a DAR that clearly describes its predictions of the impacts from the proposed development and the likely effectiveness of proposed mitigation and management plans. The resulting DAR should therefore provide an adequate initial basis for the Review Board and parties to analyze and evaluate those predictions.

⁷ See http://mvlwb.com/sites/default/files/documents/wg/WLWB_5363_Guidelines_Closure_Reclamation_WR.pdf